

11th International Conference on Fracture

Turin (Italy) - March 20-25, 2005

Final Programme



Dear Colleagues,

On behalf of the Organising Committee of ICF11, I am very pleased to introduce the 11th International Conference on Fracture, to be held in Turin, Italy, on March 20-25, 2005. ICF11 has been organised under the High Patronage of the President of the Republic of Italy, under the auspices of the Ministry of Infrastructures and Transportation of the Italian Government, and of the National Science Foundation of Italy (CNR), with the scientific support and sponsorship of worldwide leading Institutions in the fields of Fracture, Fatigue, Material Strength and Structural Integrity, like the International Congress on

Fracture itself (ICF), the European Structural Integrity Society (ESIS), the American Society for Testing and Materials (ASTM), while the Italian Group of Fracture (IGF), the Politecnico di Torino and the Turin Academy of Sciences have taken the role of host organisations.

The conference is endorsed by a strong scientific programme and by the attendance of senior Scientists and younger Delegates coming from 53 different Countries. Besides the more traditional topics, the scientific programme will cover exciting and new developments such as scaling laws, nanomechanics, smart materials, biomechanics, geophysics and tectonics, infrastructure durability, damage and restoration of historical and monumental buildings.

12 Plenary Lectures will be delivered by well-known Speakers during the Opening, Plenary and Closing Sessions. 38 Keynote Lectures will be delivered by leading Scientists in the field of Fracture to characterise the topics of the Mini-Symposia, whereas nearly 1100 presentations are scheduled to take place during 228 Special and Contributed Sessions. This total is obtained by multiplying the 16 parallel sessions by the 14 working time periods of the conference, and adding 4 further events in the Auditorium. I would like to express my most sincere appreciation to the Organisers of the Special Sessions and Mini-Symposia as well as to the Referees of the papers.

The Lingotto Conference Centre, selected to host ICF11, is one of the largest in Europe, offering first-rate services. In addition, Turin – a very historic and artistic city but also a modern and dynamic one – is ready to receive you in the best way, as it will be for the Winter Olympic Games one year from now. I hope that you will also have an opportunity to visit other beautiful places and cities of Italy during your post-conference tours.

I wish you an enjoyable stay in Italy.

Very sincerely yours,

A handwritten signature in black ink that reads "Alberto Carpinteri". The signature is written in a cursive, flowing style.

*Alberto Carpinteri
ICF11 Chairman*



Under the High Patronage of the President of the Republic of Italy

Under the Auspices of:



Ministry of Infrastructures and Transportation of the Italian Government



CITTA' DI TORINO



Consiglio Nazionale delle Ricerche (CNR)

With the Scientific Support of:



European Structural Integrity Society



International Congress on Fracture



American Society for Testing and Materials

Host Organizations:



Politecnico di Torino



Italian Group of Fracture



Turin Academy of Sciences



Favoriamo la circolazione. Di progetti, idee, soluzioni.



L'Anas rappresenta oggi il protagonista del sistema stradale e autostradale d'Italia ed è la prima stazione appaltante del Paese.

L'Anas ha progettato e realizzato grandi opere viarie ed interventi su importanti direttrici di collegamento quali il **GRA**, l'**Asti-Cuneo**, la **Salerno-Reggio Calabria**, la **Civitavecchia-Orte-Venezia** e la **Catania-Siracusa**.

L'Anas gestisce 20.532 chilometri di strade e autostrade. L'esperienza e la tecnologia dell'Anas sono al servizio dell'ammodernamento e della riqualificazione del patrimonio stradale italiano. L'Anas, inoltre, vigila sull'intero comparto autostradale a pedaggio, partecipa alla costruzione dello sviluppo equilibrato del territorio e della sua economia. Con un obiettivo: **migliorare la qualità della vita dei cittadini.**



The ICF11 Organizing Committee would like to thank the following Organizations for their support to the 11th International Conference on Fracture

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IF YOU DON'T RESPECT SPEED LIMITS,
YOU DON'T RESPECT ANYTHING.

SANTINI & SANTINI



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ICF - INTERNATIONAL CONGRESS ON FRACTURE

Founded by Professor Takeo Yokobori in 1965, the International Congress on Fracture (ICF) is today the premier international body for promoting worldwide cooperation among scientists and engineers dealing with mechanics and mechanisms of fracture, fatigue and strength of solids. Over the years, ICF has made considerable progresses in providing an international forum for highlighting individual and national accomplishments in the general fields of Fracture Mechanics, Material Strength and Structural Integrity.

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Previous Conferences

ICF-1	Sendai (Japan)	1965
ICF-2	Brighton (UK)	1969
ICF-3	Munich (Germany)	1973
ICF-4	Waterloo (Canada)	1977
ICF-5	Cannes (France)	1981
ICF-6	New Delhi (India)	1984
ICF-7	Houston (USA)	1989
ICF-8	Kiev (Ukraine)	1993
ICF-9	Sydney (Australia)	1997
ICF-10	Honolulu (USA)	2001



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- 09 Damage Mechanics**
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G.Z. Voyiadjis (USA)
- 10 Dams**
G. Maier (Italy)
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- 11 Debonding**
T. Aizawa (Japan)
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- 12 Drilling, Cutting, Sawing**
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- 13 Durability**
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- 20 High Temperature & Creep**
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- 21 Historical and Monumental Buildings**
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- 22 Hydrogen Embrittlement**
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- 24 Industrial and Architectural Sustainability**
S. Briccoli Bati (Italy)
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- 25 Inverse Problems**
S. Kubo (Japan)
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- 26 MEMS**
R. Ballarini (USA)
L. Banks-Sills (Israel)
H. Espinosa (USA)
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- 27 Metallic Materials**
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M. Elices (Spain)
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A. Pineau (France)
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- 28 Micro- or Meso-scale**
D. Gross (Germany)
M.L. Kachanov (USA)
V. Panin (Russia)
G. Pluvinage (France)
G.C. Sih (China)
S.W. Yu (China)
- 29 Mixed Mode**
E. Gdoutos (Greece)
P. Rama Rao (India)
H.A. Richard (Germany)
S. Valente (Italy)
- 30 Nano- or Micro-scale**
W. Gerberich (USA)
N. Morozov (Russia)
A.M. Rajendran (USA)
S. Suresh (USA)
W. Yang (China)
- 31 Nondestructive Examination & Monitoring**
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- 32 Nonlinear Fracture Mechanics**
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- 33 Oil & Gas Production and Distribution**
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R. Kalia (USA)
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- 36 Polymers**
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- 37 Railways**
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- 38 Reinforced Concrete**
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J. Walraven (The Netherlands)
- 39 Reliability**
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G.I. Schueller (Austria)
- 40 Scaling Laws & Size Effects**
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A. Chudnowsky (USA)
A. Hansen (Norway)
M.P. Wnuk (USA)
- 41 Smart Materials & Structures**
R.C. Batra (USA)
Y. Shindo (Japan)
N. Takeda (Japan)
- 42 Surface Treatments**
S. Pantelakis (Greece)
B. Scholtes (Germany)
- 43 Thin Films**
R.H. Dauskardt (USA)
H. Gao (Germany)
T. Sawada (Japan)
- 44 Welds**
L. Josefson (Sweden)
M. Koçak (Germany)
- 45 Wood**
P. Navi (Switzerland)

Mini-Symposia & Special Sessions

Topic 01 (AER): AERONAUTICS & AEROSPACE

MS 1: Structural Integrity of Transportation Systems

Organizers: Gangloff R.P. (USA), Newman Jr. J.C. (USA), Schwalbe K.-H. (Germany)

Topic 02 (ANALY): ANALYTICAL MODELS

SS 1: Analytical Models

Organizers: Karihaloo B.L. (UK), Leblond J.-B. (France)

SS 2: Material Forces and Fracture Mechanics

Organizers: Fischer F.D. (Austria), Kolednik O. (Austria), Simha N.K. (USA)

Topic 03 (BIO): BIOMECHANICS

SS 1: Fracture of Biomaterials and Tissues

Organizers: Soboyejo W. (USA), Taylor D. (Ireland), Teoh S.H. (Singapore)

Topic 04 (CER): CERAMICS

MS 1: Mechanical Reliability of Modern Ceramic Materials

Organizers: Danzer R. (Austria), Dusza J. (Slovakia), Morell R. (UK), Schneider G. (Germany)

Topic 05 (COMPO): COMPOSITES

MS 1: Delamination Fracture in Heterogeneous Materials and Structures

Organizers: Corigliano A. (Italy), Cox B.N. (USA), Massabò R. (Italy)

SS 1: Stress and Failure in Joints

Organizer: Munz D. (Germany)

SS 2: Failure of Ceramic-, Metal- and Polymer-based Composites

Organizer: Ochiai S. (Japan)

SS 3: Failure of Cement-based Composites

Organizer: Gettu R. (Spain)

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1: Computational Fracture Mechanics

Organizers: Belytschko T. (USA), Brocks W. (Germany), de Borst R. (The Netherlands), Hellmich C. (Austria), Ingraffea A.R. (USA), Mang H. (Austria), Moes N. (France)

MS 2: Computational and Experimental Methods for Damage, Fracture and Deformation of Solids and Structures: Recent Advances

Organizers: Miyazaki N. (Japan), Yagawa G. (Japan)

Topic 07 (CONCR): CONCRETE & ROCKS

MS 1: Fracture Mechanics of Cementitious Materials

Organizers: Leung C.K.Y. (China), Li V.C. (USA), Shah S.P. (USA)

SS 1: Concrete in Compression: Failure and Size Effects

Organizer: Ferro G. (Italy)

SS 2: Bond Failure in Concrete and Cement-based Composites

Organizer: Mihashi H. (Japan)

Mini-Symposia & Special Sessions

Topic 08 (CORR): CORROSION

SS 1: Corrosion and Fatigue of Aging Aircraft Systems

Organizers: Dietzel W. (Germany), Petit J. (France)

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1: Damage Mechanics

Organizers: Borino G. (Italy), Chaboche J.-L. (France), Jirasek M. (Czech Republic), Krajcinovic D. (USA), Voyiadjis G.Z. (USA)

Topic 10 (DAMS): DAMS

SS 1: Fracture in Dams

Organizers: Maier G. (Italy), Saouma V.E. (USA)

Topic 11 (DEBON): DEBONDING

Topic 12: DRILLING, CUTTING, SAWING

Topic 13 (DURA): DURABILITY

Topic 14 (ELEC): ELECTRONIC MATERIALS

SS 1: Fracture Processes in Microelectronics

Organizer: Goldstein R.V. (Russia)

Topic 15 (FAIL): FAILURE ANALYSIS

MS 1: Failure of Structural Materials

Organizers: Chong K.P. (USA), Amde A.M. (USA), Chau K.T. (China), Manzari M.T. (USA), Wan K.-T. (USA)

SS 1: Failure Analysis in Plants and Transportation

Organizers: Bicego V. (Italy), Deegan D.C. (USA), Firrao D. (Italy)

Topic 16 (FATIG): FATIGUE

MS 1: Fatigue Mechanisms and Modeling

Organizers: Dodds R. (USA), Ritchie R.O. (USA)

MS 2: Numerical Approaches to Fatigue

Organizers: Carpinteri An. (Italy), Pook L.P. (UK)

Topic 17 (GRAD): FUNCTIONALLY GRADED MATERIALS

SS 1: Functionally Graded Materials

Organizers: Kim J.-H. (USA), Paulino G.H. (USA)

Mini-Symposia & Special Sessions

Topic 18 (GEO): GEOPHYSICS & TECTONICS

SS 1: Geophysics and Tectonics: from Fracture Mechanics to Earthquake Triggering

Organizers: Ampuero J.P. (USA), Schmittbuhl J. (France), Ziv A. (Israel)

Topic 19 (GLASS): GLASS

SS 1: Fracture of Glass

Organizers: Mecholsky J.J. (USA), Rouxel T. (France), Sglavo V.M. (Italy)

Topic 20 (CREEP): HIGH TEMPERATURE & CREEP

MS 1: Mechanisms and Standardization under Creep and Fatigue Conditions

Organizers: Mc Dowell D.L. (USA), Saxena A. (USA), Yokobori Jr. A.T. (Japan), Wilshire B. (UK)

SS 1: Life Assessment and Maintenance Technology for High Temperature Equipments

Organizer: Kitagawa M. (Japan)

Topic 21 (HIST): HISTORICAL AND MONUMENTAL BUILDINGS

SS 1: Damage and Long-Term Behaviour of Historic Buildings

Organizer: Binda L. (Italy)

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT

MS 1: Environmental Degradation of Materials: Hydrogen Embrittlement

Organizers: Dietzel W. (Germany), Haidemenopoulos G. (Greece), Morgan M. (USA), Schwarz R.B. (USA), Sofronis P. (USA), Somerday B. (USA)

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1: Advances in Dynamic Failure Mechanics

Organizer: Rajapakse Y.D.S. (USA)

SS 1: Modeling and Simulation of Dynamic Fracture and Damage

Organizer: Chen E.P. (USA)

Topic 24: INDUSTRIAL & ARCHITECTURAL SUSTAINABILITY

Topic 25 (INV): INVERSE PROBLEMS

SS 1: Inverse Problems and Damage Identification

Organizers: Kubo S. (Japan), Maier G. (Italy), Mroz Z. (Poland), Saka M. (Japan)

Topic 26 (MEMS): MEMS

SS 1: Fracture and Fatigue at the Micro and Nano Scales

Organizers: Ballarini R. (USA), Banks-Sills L. (Israel), Espinosa H. (USA), Gerberich W. (USA), Wolf D. (USA)

SS 2: MEMS

Organizers: Michel B. (Germany), Auersperg J. (Germany)

Mini-Symposia & Special Sessions

Topic 27 (MET): METALLIC MATERIALS

SS 1: Metallic Materials

Organizer: Pineau A. (France)

SS 2: Micromechanics of Fracture in Spatially Heterogeneous Materials

Organizers: Bréchet Y. (France), Firrao D. (Italy), Pardoen T. (Belgium)

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 1: Mesofracture Mechanics

Organizer: Sih G.C. (China)

MS 2: Meso-Micro-Scale Fracture

Organizers: Gross D. (Germany), Yu S. (China)

SS 1: Micro- or Meso-Scale

Organizer: Panin V. (Russia)

Topic 29 (MIXED): MIXED MODE

MS 1: Mixed Mode Crack Growth

Organizers: Gdoutos E.E. (Greece), Rama Rao P. (India), Valente S. (Italy)

Topic 30 (NANO): NANO- OR MICRO-SCALE

SS 1: Nanoindentation of Engineering and Biological Materials

Organizers: Dao M. (USA), Lim C.T. (Singapore), Suresh S. (USA)

SS 2: Strength and Stability of Nanoobjects

Organizers: Aifantis E. (Greece), Morozov N.F. (Russia)

Topic 31 (NDE): NONDESTRUCTIVE EXAMINATION & MONITORING

SS 1: Damage Evaluation of Concrete by Nondestructive Monitoring

Organizer: Ohtsu M. (Japan)

Topic 32 (NLFM): NONLINEAR FRACTURE MECHANICS

MS 1: Nonlinear Fracture Mechanics

Organizers: Needleman A. (USA), Pineau A. (France), Tvergaard V. (Denmark)

Topic 33 (OIL): OIL & GAS PRODUCTION AND DISTRIBUTION

SS 1: Oil & Gas Production and Distribution

Organizers: Demofonti G. (Italy), Knauf G. (Germany), Rothwell B. (Canada), Salvini P. (Italy)

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1: Physics and Scaling in Fracture

Organizers: Bouchaud E. (France), Chiaia B. (Italy), Hansen A. (Norway), Herrmann H.J. (Germany), Kalia R. (USA), Marder M. (USA), van Mier J.G.M. (Switzerland)

Topic 35: PLANT AGING

Mini-Symposia & Special Sessions

Topic 36 (POLYM): POLYMERS

SS 1: Crack Propagation and Fracture in Advanced Polymeric Materials

Organizers: Bellare A. (USA), Pruitt L.A. (USA)

Topic 37 (RAIL): RAILWAYS

SS 1: Structural Integrity of Transportation Systems

Organizers: Beretta S. (Italy), Smith R. (UK), Zerbst U. (Germany)

Topic 38 (RC): REINFORCED CONCRETE

SS 1: Reinforced Concrete

Organizer: Plizzari G. (Italy)

Topic 39 (RELIA): RELIABILITY

SS 1: Statistical Methods in Fracture and Fatigue

Organizer: Schueller G.I. (Austria)

Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS

MS 1: Complexity, Scaling and Non-Linearity in the Mechanics of Advanced Materials

Organizer: Carpinteri A. (Italy)

SS 1: From Micro to Global Scale

Organizers: Botvina L.R. (Russia), Korsunsky A.M. (UK)

Topic 41 (SMART): SMART MATERIALS & STRUCTURES

SS 1: Electromagnetic Fracture Mechanics of Smart Materials & Structures

Organizer: Shindo Y. (Japan)

Topic 42 (SURF): SURFACE TREATMENTS

Topic 43 (THIN): THIN FILMS

SS 1: Mechanical Properties of Thin Films

Organizers: Balk T.J. (Germany), Buehler M.J. (USA), Dauskardt R.H. (USA), Gao H. (Germany), Hartmaier A. (Germany)

Topic 44 (WELD): WELDS

Topic 45 (WOOD): WOOD

SS 1: Fracture of Wood

Organizers: Gustafsson P.J. (Sweden), Navi P. (Switzerland)

Timetable

	Sunday 20	Monday 21	Tuesday 22	Wednesday 23	Thursday 24	Friday 25
8,30-10,00 am			PLENARY SESSION	PLENARY SESSION	PLENARY SESSION	PLENARY SESSION
10,00-10,30 am			Coffee Break	Coffee Break	Coffee Break	Coffee Break
10,00 am-12,30 pm		OPENING CEREMONY & HONOUR LECTURES				
10,30 am-12,10 pm			PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS
12,10-02,00 pm		Lunch Time	Lunch Time	Lunch Time	Lunch Time	Lunch Time
02,00-03,40 pm		PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS
03,40-04,10 pm		Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
04,10-05,50 pm		PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS	PARALLEL SESSIONS
06,00-08,00 pm	REGISTRATION & WELCOME RECEPTION					CLOSING LECTURES & CEREMONY
10,00 am-06,00 pm		EXHIBITION	EXHIBITION	EXHIBITION	EXHIBITION	EXHIBITION
08,30-12,00 pm				CONCERT & BANQUET		

Mini-Symposia, Special Sessions & Contributed Sessions Table

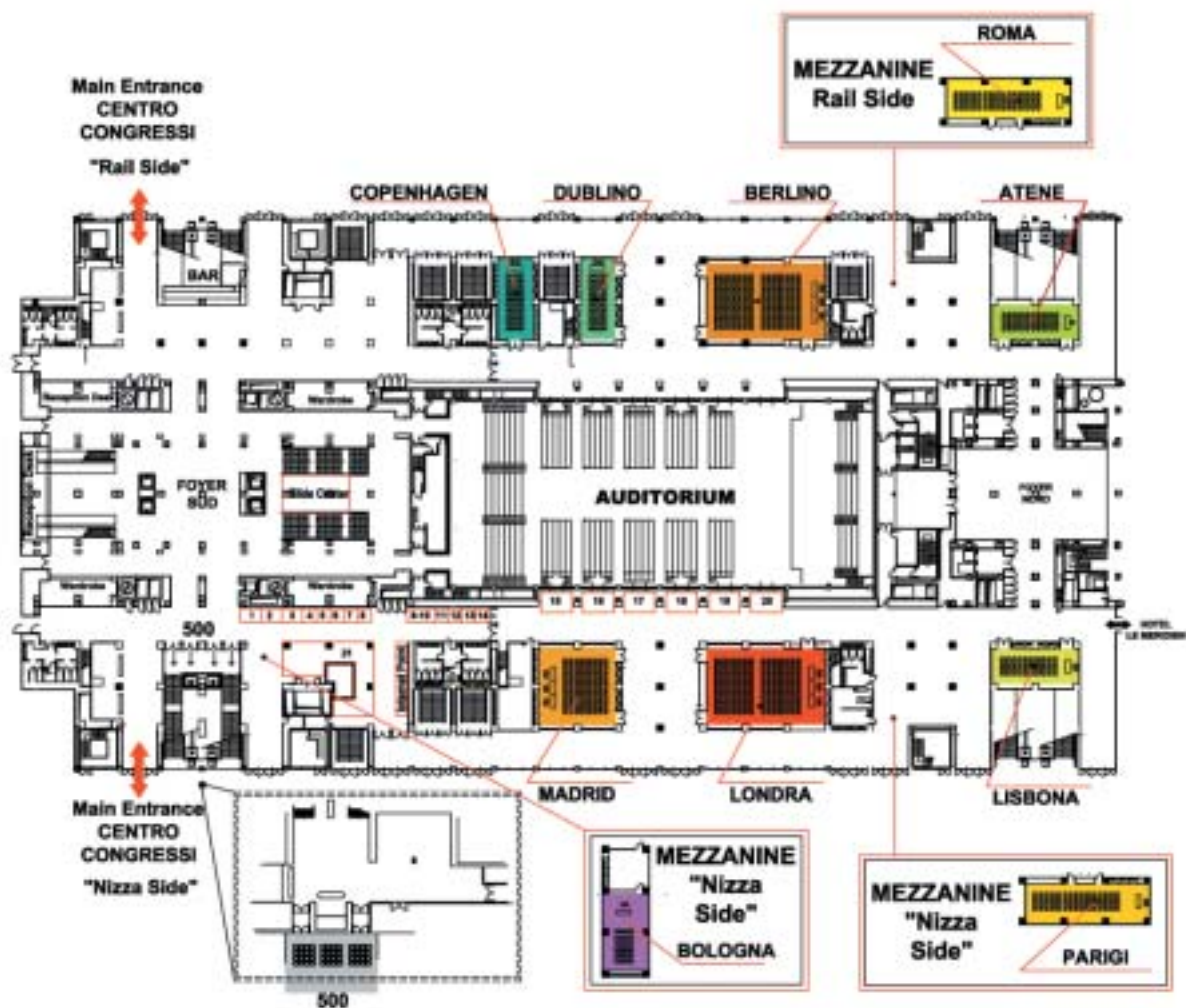
	Auditorium	Londra	Berlino	Madrid	Parigi	Roma	Lisbona	Atene	
Monday, March 21	02:00-03:40 pm		Topic 06 COMPU MS 1 - 1	Topic 16 FATIG MS 1 - 1	Topic 28 MESO MS 1 - 1	Topic 34 PHYS MS 1 - 1	Topic 05 COMPO MS 1 - 1	Topic 09 DAMAG MS 1 - 1	Topic 27 MET SS 1 - 1
	04:10-05:50 pm		Topic 06 COMPU MS 1 - 2	Topic 16 FATIG MS 1 - 2	Topic 28 MESO MS 1 - 2	Topic 34 PHYS MS 1 - 2	Topic 05 COMPO MS 1 - 2	Topic 09 DAMAG MS 1 - 2	Topic 27 MET SS 1 - 2
Tuesday, March 22	10:30-12:10 pm	Topic 34 PHYS MS 1 - 3	Topic 06 COMPU MS 1 - 3	Topic 16 FATIG MS 1 - 3	Topic 28 MESO MS 1 - 3	Topic 32 NLFM MS 1 - 1	Topic 05 COMPO MS 1 - 3	Topic 09 DAMAG MS 1 - 3	Topic 27 MET SS 2 - 1
	02:00-03:40 pm		Topic 06 COMPU MS 1 - 4	Topic 16 FATIG MS 1 - 4	Topic 28 MESO MS 1 - 4	Topic 34 PHYS MS 1 - 4	Topic 05 COMPO MS 1 - 4	Topic 09 DAMAG MS 1 - 4	Topic 27 MET SS 2 - 2
	04:10-05:50 pm		Topic 06 COMPU MS 1 - 5	Topic 16 FATIG MS 2 - 1	Topic 28 MESO MS 2 - 1	Topic 34 PHYS MS 1 - 5	Topic 05 COMPO MS 1 - 5	Topic 09 DAMAG MS 1 - 5	Topic 27 MET CS 1
Wednesday, March 23	10:30-12:10 pm	Topic 34 PHYS MS 1 - 6	Topic 06 COMPU MS 1 - 6	Topic 16 FATIG MS 2 - 2	Topic 28 MESO MS 2 - 2	Topic 32 NLFM MS 1 - 2	Topic 05 COMPO SS 1 - 1	Topic 09 DAMAG MS 1 - 6	Topic 27 MET CS 2
	02:00-03:40 pm		Topic 06 COMPU MS 1 - 7	Topic 16 FATIG MS 2 - 3	Topic 28 MESO MS 2 - 3	Topic 34 PHYS MS 1 - 7	Topic 05 COMPO SS 1 - 2	Topic 09 DAMAG MS 1 - 7	Topic 27 MET CS 3
	04:10-05:50 pm		Topic 06 COMPU MS 1 - 8	Topic 16 FATIG MS 2 - 4	Topic 28 MESO MS 2 - 4	Topic 34 PHYS MS 1 - 8	Topic 05 COMPO SS 2 - 1	Topic 09 DAMAG MS 1 - 8	Topic 27 MET CS 4
Thursday, March 24	10:30-12:10 pm	Topic 34 PHYS MS 1 - 9	Topic 06 COMPU MS 1 - 9	Topic 16 FATIG CS 1	Topic 28 MESO SS 1 - 1	Topic 32 NLFM MS 1 - 3	Topic 05 COMPO SS 2 - 2	Topic 09 DAMAG MS 1 - 9	Topic 27 MET CS 5
	02:00-03:40 pm		Topic 06 COMPU MS 1 - 10	Topic 16 FATIG CS 2	Topic 28 MESO SS 1 - 2	Topic 34 PHYS MS 1 - 10	Topic 05 COMPO CS 1	Topic 09 DAMAG MS 1 - 10	Topic 27 MET CS 6
	04:10-05:50 pm		Topic 09 DAMAG MS 1 - 11	Topic 34 PHYS MS 1 - 11	Topic 28 MESO SS 1 - 3	Topic 06 COMPU MS 1 - 11	Topic 06 COMPU MS 2 - 1	Topic 16 FATIG CS 3	Topic 16 FATIG CS 4
Friday, March 25	10:30-12:10 pm	Topic 34 PHYS MS 1 - 12*	Topic 03 BIO SS 1 - 1	Topic 37 RAIL SS 1 - 1	Topic 28 MESO CS 1	Topic 06 COMPU MS 1 - 12	Topic 06 COMPU MS 2 - 2	Topic 16 FATIG CS 5	Topic 16 FATIG CS 6
	02:00-03:40 pm		Topic 03 BIO SS 1 - 2	Topic 37 RAIL SS 1 - 2	Topic 28 MESO CS 2	Topic 18 GEO SS 1 - 1	Topic 06 COMPU MS 2 - 3	Topic 16 FATIG CS 7	Topic 16 FATIG CS 8
	04:10-05:50 pm		Topic 03 BIO SS 1 - 3	Topic 37 RAIL SS 1 - 3	Topic 13 DURA CS 1	Topic 32 NLFM MS 1 - 4	Topic 06 COMPU MS 2 - 4	Topic 16 FATIG CS 9	Topic 16 FATIG CS 10

* 500's Room

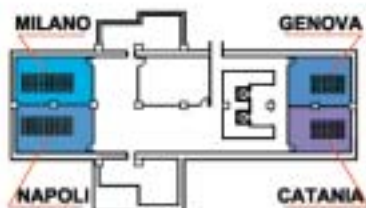
Mini-Symposia, Special Sessions & Contributed Sessions Table

Dublino	Copenhagen	Firenze	Venezia	Milano	Napoli	Genova	Catania	Bologna
Topic 23 DYN MS 1-1	Topic 01 AER MS 1-1	Topic 15 FAIL MS 1-1	Topic 07 CONCR MS 1-1	Topic 02 ANALY SS 1-1	Topic 20 CREEP MS 1-1	Topic 30 NANO SS 1-1	Topic 40 SCALE MS 1-1	Topic 04 CER MS 1-1
Topic 23 DYN MS 1-2	Topic 01 AER MS 1-2	Topic 15 FAIL MS 1-2	Topic 07 CONCR MS 1-2	Topic 02 ANALY SS 1-2	Topic 20 CREEP MS 1-2	Topic 30 NANO SS 1-2	Topic 40 SCALE MS 1-2	Topic 04 CER MS 1-2
Topic 23 DYN MS 1-3	Topic 01 AER MS 1-3	Topic 15 FAIL MS 1-3	Topic 07 CONCR MS 1-3	Topic 02 ANALY SS 2-1	Topic 20 CREEP MS 1-3	Topic 30 NANO SS 2-1	Topic 40 SCALE MS 1-3	Topic 04 CER MS 1-3
Topic 23 DYN MS 1-4	Topic 01 AER MS 1-4	Topic 15 FAIL MS 1-4	Topic 07 CONCR MS 1-4	Topic 02 ANALY SS 2-2	Topic 20 CREEP MS 1-4	Topic 30 NANO SS 2-2	Topic 40 SCALE MS 1-4	Topic 04 CER MS 1-4
Topic 23 DYN MS 1-5	Topic 01 AER MS 1-5	Topic 15 FAIL SS 1-1	Topic 07 CONCR SS 1-1	Topic 02 ANALY CS 1	Topic 20 CREEP SS 1-1	Topic 30 NANO SS 2-3	Topic 40 SCALE MS 1-5	Topic 19 GLASS SS 1-1
Topic 23 DYN MS 1-6	Topic 01 AER CS 1	Topic 15 FAIL SS 1-2	Topic 07 CONCR SS 2-1	Topic 02 ANALY CS 2	Topic 20 CREEP CS 1	Topic 30 NANO CS 1	Topic 40 SCALE MS 1-6	Topic 19 GLASS SS 1-2
Topic 23 DYN MS 1-7	Topic 01 AER CS 2	Topic 15 FAIL SS 1-3	Topic 07 CONCR SS 2-2	Topic 02 ANALY CS 3	Topic 08 CORR SS 1-1	Topic 43 THIN SS 1-1	Topic 40 SCALE SS 1-1	Topic 19 GLASS SS 1-3
Topic 23 DYN MS 1-8	Topic 01 AER CS 3	Topic 15 FAIL CS 1	Topic 07 CONCR CS 1	Topic 22 HYDR MS 1-1	Topic 08 CORR SS 1-2	Topic 43 THIN SS 1-2	Topic 31 NDE SS 1-1	Topic 36 POLYM SS 1-1
Topic 23 DYN MS 1-9	Topic 01 AER CS 4	Topic 15 FAIL CS 2	Topic 10 DAMS SS 1-1	Topic 22 HYDR MS 1-2	Topic 08 CORR SS 1-3	Topic 43 THIN SS 1-3	Topic 31 NDE SS 1-2	Topic 36 POLYM SS 1-2
Topic 23 DYN SS 1-1	Topic 26 MEMS SS 1-1	Topic 14 ELEC SS 1-1	Topic 05 COMPO SS 3-1	Topic 22 HYDR MS 1-3	Topic 29 MIXED MS 1-1	Topic 41 SMART SS 1-1	Topic 31 NDE CS 1	Topic 36 POLYM CS 1
Topic 39 RELIA SS 1-1	Topic 26 MEMS SS 1-2	Topic 27 MET CS 7	Topic 38 RC SS 1-1	Topic 22 HYDR MS 1-4	Topic 29 MIXED MS 1-2	Topic 41 SMART SS 1-2	Topic 21 HIST SS 1-1	Topic 36 POLYM CS 2
Topic 39 RELIA SS 1-2	Topic 26 MEMS SS 2-1	Topic 33 OIL SS 1-1	Topic 38 RC SS 1-2	Topic 22 HYDR MS 1-5	Topic 29 MIXED MS 1-3	Topic 17 GRAD SS 1-1	Topic 21 HIST SS 1-2	Topic 44 WELD CS 1
Topic 39 RELIA SS 1-3	Topic 26 MEMS SS 2-2	Topic 33 OIL SS 1-2	Topic 25 INV SS 1-1	Topic 22 HYDR CS 1	Topic 29 MIXED MS 1-4	Topic 11 DEBON CS 1	Topic 45 WOOD SS 1-1	Topic 44 WELD CS 2
Topic 14 ELEC SS 1-2	Topic 26 MEMS CS 1	Topic 33 OIL CS 1	Topic 25 INV SS 1-2	Topic 22 HYDR CS 2	Topic 29 MIXED MS 1-5	Topic 11 DEBON CS 2	Topic 45 WOOD SS 1-2	Topic 42 SURF CS 1

Lingotto Conference Centre Map



**BUSINESS CENTER
2nd floor**

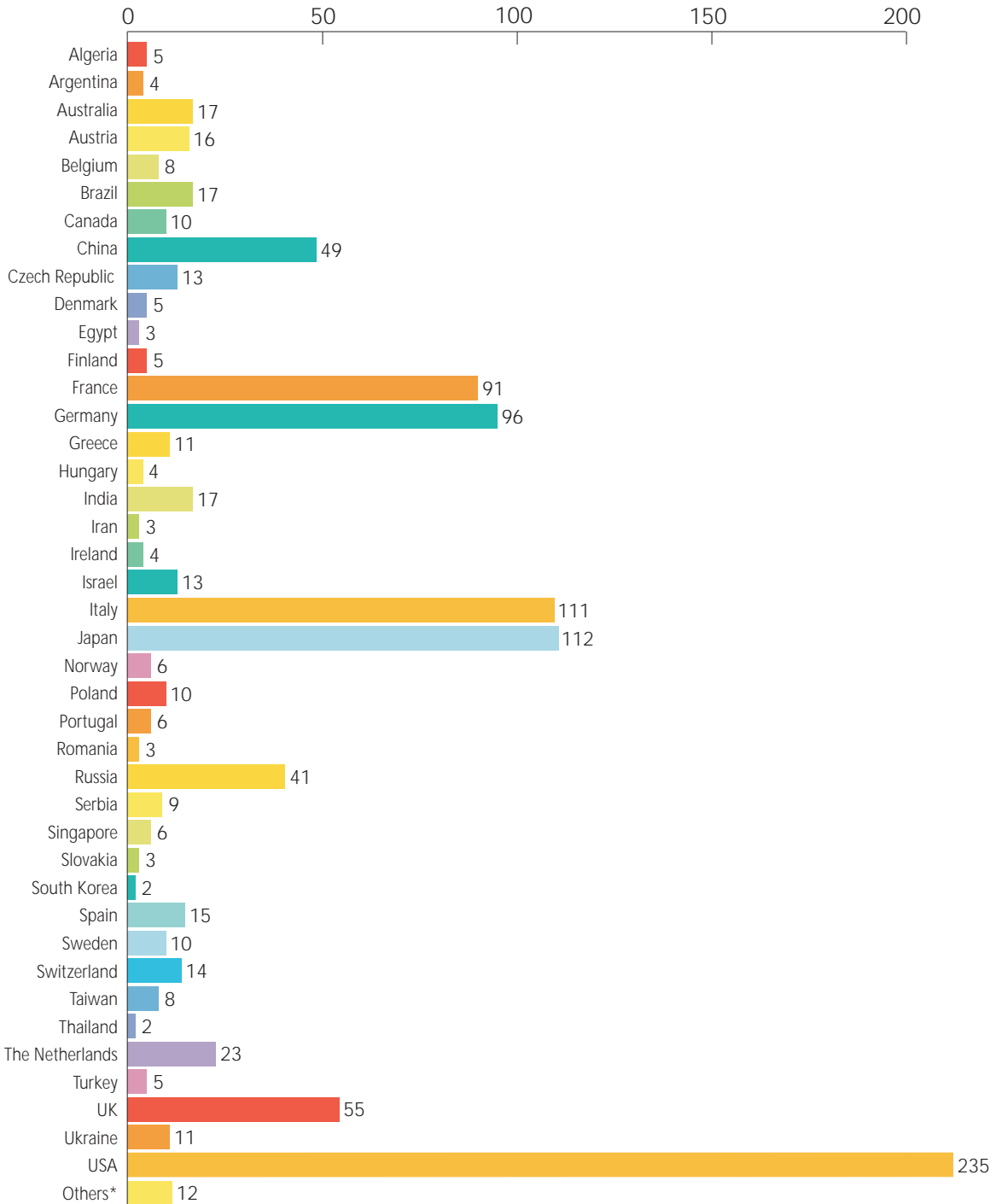


**BUSINESS CENTER
3rd floor**



Number of accepted Abstracts per each Country

Total number of accepted Abstracts: 1090



* Armenia, Chile, Cyprus, Croatia, Estonia, Georgia, Latvia, Liechtenstein, Lithuania, Morocco, Mexico, Saudi Arabia



Scientific Programme



Opening, Plenary & Closing Sessions

Sunday, March 20

06,00-08,00 pm

Exhibition Area and Hall

Registration and Welcome Reception

Monday, March 21

10,00 am-12,30 pm

Auditorium

Opening Ceremony and Honour Lectures

Chairman: Alberto Carpinteri (ICF11 Chairman)

Opening Addresses

Yiu-Wing Mai (ICF President)

Pietro Rossi (President of the Academy of Sciences of Turin)

Ugo Martinat (Deputy Minister for Infrastructures and Transportation of the Italian Government)

Ceremony of Presentation of the Doctorate H.C. in Civil Engineering to Professor B.B. Mandelbrot and to Professor G.I. Barenblatt

Giovanni Del Tin (Rector of the Politecnico di Torino)

Francesco Profumo (Dean of the 1st Faculty of Engineering)

- 11,00 am **FRACTAL ANALYSIS AND SYNTHESIS OF FRACTURE SURFACE ROUGHNESS AND RELATED FORMS OF COMPLEXITY AND DISORDER**
Professor Benoit B. Mandelbrot
- 11,45 am **SCALING PHENOMENA IN FATIGUE AND FRACTURE**
Professor Grigory I. Barenblatt

Tuesday, March 22

08,30-10,00 am

Auditorium

Plenary Lectures

Chairman: Yiu-Wing Mai (Australia)

08,30 am **ICF CONTRIBUTION TO FRACTURE RESEARCH
IN THE SECOND HALF OF THE 20TH CENTURY**

Professor Takeo Yokobori (Japan)

09,15 am **ON INVERSE ANALYSIS IN FRACTURE MECHANICS**

Professor Giulio Maier (Italy)

Wednesday, March 23

08,30-10,00 am

Auditorium

Plenary Lectures

Chairman: Robert O. Ritchie (USA)

08,30 am **NANOPROBING FRACTURE LENGTH SCALES**

Professor William Gerberich (USA)

09,15 am **APPLICATION OF FRACTURE MECHANICS CONCEPTS
TO NANOSTRUCTURES OF BIOLOGICAL SYSTEMS**

Professor Huajian Gao (Germany)

Thursday, March 24

08,30-10,00 am

Auditorium

Plenary Lectures

Chairman: Toshimitsu Yokobory (Japan)

08,30 am **DEVELOPMENT OF THE LOCAL APPROACH TO FRACTURE OVER THE PAST 25 YEARS: THEORY AND APPLICATIONS**

Professor André Pineau (France)

09,15 am **THE EFFECT OF HYDROGEN ON FATIGUE PROPERTIES OF METALS USED FOR FUEL CELL SYSTEMS**

Professor Yukitaka Murakami (Japan)

Friday, March 25

08,30-10,00 am

500's Room

Plenary Lectures

Chairman: Donato Firrao (Italy)

08,30 am **GLOBAL ENERGY METHODS AS A BASIS OF FRACTURE ANALYSIS**

Professor Gordon Williams (UK)

09,15 am **LABORATORY EARTHQUAKES**

Professor Ares Rosakis (USA)

18,00-19,30 pm

500's Room

Closing Lectures

Chairman: David Taplin (UK)

18,00 pm **ELECTROMIGRATION FAILURE OF METAL LINES**

Professor Hiroyuki Abé (Japan)

18,45 pm **MODERN DOMAIN-BASED DISCRETIZATION METHODS FOR DAMAGE AND FRACTURE**

Professor René de Borst (The Netherlands)



**Mini-Symposia, Special Sessions
& Contributed Sessions**

Monday, March 21

02,00-03,40 pm

02,00-03,40 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 1: Computational Fracture Mechanics

Chairman: de Borst R. (The Netherlands)

- 02,00 pm TWO- AND THREE-DIMENSIONAL CRACK PROPAGATION ANALYSES USING A NODE-BASED FINITE ELEMENT METHOD
Yagawa G. (Japan)
- 02,40 pm DAMAGE AND DISCRETE CRACK PROPAGATION MODELLING – SOME RESULTS AND CHALLENGES FOR 2D AND 3D CONFIGURATIONS
Bouchard P.O. (France)
- 03,00 pm ANALYSIS OF MESH DEPENDENCE IN RIGID COHESIVE INTERFACE FINITE ELEMENT MODELS
Papoulia K.D., Vavasis S.A., Sam C.-H., Ganguly P. (USA)
- 03,20 pm COMPUTATIONAL DYNAMIC FRACTURE ANALYSIS FOR DROP TESTS OF SHIPPING CASKS
Enderlein M., Völzer W., Ricoeur A., Kuna M. (Germany)

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 1 - 1: Fatigue Mechanisms and Modeling

Chairman: Ritchie R. (USA)

- 02,00 pm CRACK GROWTH PREDICTIONS IN ALUMINUM AND TITANIUM ALLOYS UNDER AIRCRAFT LOAD SPECTRA
Newman Jr. J.C. (USA)
- 02,20 pm TIME-DERIVATIVE EQUATIONS FOR FATIGUE CRACK GROWTH
Pommier S. (France)
- 02,40 pm NUMERICAL SIMULATIONS OF CONSTRAINT AND SIZE EFFECTS IN FATIGUE CRACK GROWTH
Wang B., Siegmund T. (USA)
- 03,00 pm DDSIM: A NEXT GENERATION DAMAGE AND DURABILITY SIMULATOR
Emery J.M., Wawrzynek P.A., Ingraffea A.R. (USA)
- 03,20 pm A TWO PARAMETER K_{\max} AND ΔK MODEL FOR FATIGUE CRACK GROWTH
Kujawski D., Stoychev S. (USA)

02,00-03,40 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 1 - 1: Mesofracture Mechanics

Chairman: Sih G.C. (China, USA)

- 02,00 pm TRANSLATIONAL AND ROTATIONAL CHARACTERISTICS OF VOLUME ENERGY DENSITY FUNCTION FOR MULTISCALE DAMAGE MODEL
Sih G.C. (China, USA)
- 02,40 pm VARIANCE OF CRACK GROWTH ENHANCEMENT AND IMPEDIMENT IN PIEZOELECTRIC MATERIALS COMPLICATED BY DIFFERENCE IN FRACTURE CRITERIA
Spyropoulos C.P. (Greece)
- 03,00 pm PREDICTION OF FRACTURE INITIATION AND GROWTH DIRECTION OF ORTHOTROPIC MATERIALS
Nobile L., Carloni C. (Italy)
- 03,20 pm MIXED MODE FATIGUE CRACK GROWTH USING THE STRAIN ENERGY DENSITY THEORY FOR WIDESPREAD FATIGUE DAMAGE
Jeong D.Y. (USA)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 1: Physics and Scaling in Fracture

Chairlady: Bouchaud E. (France)

- 02,00 pm EXPERIMENTS ON DYNAMIC SLIP
Lim J., Ravi-Chandar K. (USA)
- 02,40 pm CRACKS OF HIGHER MODES IN COSSERAT CONTINUA
Pasternak E., Dyskin A.V., Mühlhaus H.-B. (Australia)
- 03,00 pm FRACTURE AND DAMAGE IN BOTH NANOPHASE AND CERAMICS: ON THE MORPHOLOGY OF FRACTURE SURFACES
Ponson L., Bonamy D., Auradou H., Bouchaud E., Guillot C. (France), Fairbairn E. (Brazil), Hulin J.-P. (France)
- 03,20 pm DYNAMICS OF CUTTING VISCOELASTIC MATERIALS
Koehler S.A. (USA)

02,00-03,40 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

MS 1 - 1: Delamination Fracture in Heterogeneous Materials and Structures

Chairman: Corigliano A. (Italy)

- 02,00 pm DUCTILITY OF A THIN METAL FILM ON A POLYMER SUBSTRATE
Suo Z., Li T., Huang Z.Y., Xi Z.C., Lacour S.P., Wagner S. (USA)
- 02,40 pm A COHESIVE INTERFACE MODEL BASED ON DAMAGE AND FRICTION
Alfano G., Sacco E. (Italy)
- 03,00 pm A COMPUTATIONAL TECHNIQUE FOR PREDICTING DELAMINATION GROWTH IN SOLIDS WITH VISCOELASTIC INTERFACES
Allen D.H. (USA)
- 03,20 pm A COMPUTATIONAL METHOD FOR THE PREDICTION OF DAMAGE AND DELAMINATION IN COMPOSITE PIPES
Allix O., Baranger E., Blanchard L. (France)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 1: Damage Mechanics

Chairman: Borino G. (Italy)

- 02,00 pm NONLOCAL ELASTICITY COUPLED WITH NONLOCAL DAMAGE
Polizzotto C. (Italy)
- 02,20 pm THERMODYNAMICAL ASPECTS OF IMPLICIT GRADIENT DAMAGE
Peerlings R.H.J., Geers M.G.D. (The Netherlands)
- 02,40 pm NONLOCAL DAMAGE THEORIES BASED ON BALANCES OF MATERIAL FORCES
Stumpf H., Makowski J., Hackl K. (Germany)
- 03,00 pm THEORETICAL FRAMEWORK FOR COUPLING OF NON-LOCAL DAMAGE AND VISCOPLASTICITY FOR DYNAMIC LOCALIZATION PROBLEMS
Voyiadjis G., Abu Al-Rub R.K. (USA)
- 03,20 pm DAMAGE AND MACROSCOPIC VANISHING MOTIONS
Bonetti E. (Italy), Fremond M. (France)

02,00-03,40 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

SS 1 - 1: Metallic Materials

Chairman: Pineau A. (France)

- 02,00 pm RECENT ADVANCES IN MODELLING DUCTILE RUPTURE
Benzerga A.A. (USA), Besson J., Pineau A. (France)
- 02,20 pm MULTISCALE SIMULATION OF THE COMPETITION BETWEEN
TRANSGRANULAR AND INTERGRANULAR DUCTILE FRACTURE
*Scheyvaerts F. (Belgium), Onck P.R. (The Netherlands), Bréchet Y. (France),
Pardoen T. (Belgium)*
- 02,40 pm A FRACTOGRAPHIC STUDY OF DAMAGE ACCUMULATION DURING
FRACTURE OF TWO STEELS
Al-Nabulsi K. (Saudi Arabia), Koss D.A. (USA)
- 03,00 pm RECENT RESULTS ON DUCTILE FRACTURE MODELING AT THE MACRO
AND MICROSCALES
Rousselier G., Pastor J., Bilger N., Leclercq S. (France)
- 03,20 pm A COUPLED THERMOMECHANICAL COHESIVE ZONE MODEL FOR
INTERFACE CRACK GROWTH IN THERMAL PROTECTION SYSTEMS
Hattiangadi A., Siegmund T. (USA)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 1: Advances in Dynamic Failure Mechanics

Chairman: Rajapakse Y.D.S. (USA)

- 02,00 pm RECENT ADVANCES IN DYNAMIC FAILURE MECHANICS
Rajapakse Y.D.S. (USA)
- 02,40 pm VALIDATION OF MASSIVELY PARALLEL SIMULATIONS OF DYNAMIC
FRACTURE AND FRAGMENTATION OF BRITTLE SOLIDS
Arias I., Knap J., Chalivendra V.B., Hong S., Ortiz M., Rosakis A.J. (USA)
- 03,00 pm FRACTURE TOUGHNESS OF FAST PROPAGATING CRACKS IN ROCK
Bertram A., Kalthoff J.F. (Germany)
- 03,20 pm BRANCHING INSTABILITY OF BRITTLE FRACTURE
Adda-Bedia M. (France)

02,00-03,40 pm

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

MS 1 - 1: Structural Integrity of Transportation Systems

Chairman: Schwalbe K.-H. (Germany)

- 02,00 pm DAMAGE TOLERANT RISK ANALYSIS TECHNIQUES FOR EVALUATING THE STRUCTURAL INTEGRITY OF AIRCRAFT STRUCTURES
Gallagher J.P., Babish C.A., Malas J.C. (USA)
- 02,40 pm INTEGRITY OF JOINT STRUCTURES~THE KEY TO DAMAGE TOLERANCE
Terada H., Okada T. (Japan)
- 03,00 pm LAP JOINT MSD ASSESSMENT USING A PROBABILISTIC MODEL
Garcia A.N., Irving P.E. (UK)
- 03,20 pm DESTRUCTIVE EVALUATION AND EXTENDED FATIGUE TESTING OF RETIRED AIRCRAFT FUSELAGE STRUCTURE
Bakuckas Jr. J.G., Carter A. (USA)

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

MS 1 - 1: Failure of Structural Materials

Chairman: Balaguru P.N. (USA)

- 02,00 pm POSTPONEMENT OF FAILURE OF CONCRETE BY SURFACE PROTECTION AND DURABILITY ASPECTS
Balaguru P. N., Chong K.P. (USA)
- 02,40 pm SUSTAINABLE DEVELOPMENT AND DURABILITY OF SELF-COMPACTING CONCRETES
Coppola L., Cerulli T., Salvioni D. (Italy)
- 03,00 pm CHARACTERIZATION OF DISTRIBUTED DAMAGE IN CONCRETE USING ADVANCED IMPACT-ECHO METHOD
Livingston R.A., Sutin A.M., McMorris N., Ceary M., Amde A.M. (USA)
- 03,20 pm CORRELATION BETWEEN MAP CRACKING AND DELAYED ETTRINGITE FORMATION IN FIELD SPECIMENS
Amde A.M., Ceary M., Livingston R.A. (USA)

02,00-03,40 pm

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

MS 1 - 1: Fracture Mechanics of Cementitious Materials

Chairman: Navi P. (Switzerland)

- 02,00 pm WATER PERMEABILITY OF CRACKED CEMENTITIOUS COMPOSITES
Lepech M., Li V.C. (USA)
- 02,20 pm TRANSPORT PROPERTIES AND STEEL CORROSION IN DUCTILE FIBER REINFORCED CEMENT COMPOSITES
Miyazato S., Hiraishi Y. (Japan)
- 02,40 pm A DISCRETE FRACTURE APPROACH FOR DIFFUSION/COUPLED ANALYSIS WITH CRACKS AND DISCONTINUITIES
Segura J.M., Carol I. (Spain)
- 03,00 pm A COUPLED DISCRETE APPROACH TO SIMULATE MOISTURE EFFECTS ON DAMAGE PROCESSES IN POROUS MATERIALS
Moonen P., Roels S., De Proft K. (Belgium), Carmeliet J. (Belgium, The Netherlands)
- 03,20 pm FRACTURE MECHANICAL ASSESSMENT OF RAILWAY SUPERSTRUCTURES MADE OF CONCRETE
Kessler-Kramer C., Mechtcherine V., Müller H.S. (Germany)

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

SS 1 - 1: Analytical Models

Chairman: Leblond J.-B. (France)

- 02,00 pm DISORDER OF THE FRONT OF A TENSILE TUNNEL-CRACK PROPAGATING IN SOME INHOMOGENEOUS MEDIUM
Favier E., Lazarus V., Leblond J.-B. (France)
- 02,20 pm PARTIAL CLOSURE ANALYSIS OF A SURFACE CRACK IN A GRADED MEDIUM LOADED BY A FRICTIONAL FLAT STAMP
Dag S. (Turkey), El-Borgi S. (Tunisia), Erdogan F. (USA)
- 02,40 pm INFLUENCE OF THE INTERMEDIATE MATERIAL ON THE SINGULAR STRESS FIELD IN TRI-MATERIAL JUNCTIONS
Carpinteri A., Paggi M. (Italy)
- 03,00 pm INITIATION OF FAILURE IN A SINGLE LAP JOINT
Braccini M., Dupeux M., Leguillon D. (France)
- 03,20 pm FE ANALYSIS OF STRESS AND STRAIN FIELDS IN FINITE RANDOM COMPOSITE BODIES: APPLICATION TO CRACK TIP FIELD
Luciano R. (Italy), Willis J.R. (UK)

02,00-03,40 pm

Napoli Room

Topic 20 (CREEP): HIGH TEMPERATURE & CREEP

MS 1 - 1: Mechanisms and Standardization under Creep and Fatigue Conditions

Chairman: Yokobori Jr. A.T. (Japan)

- 02,00 pm CODE OF PRACTICE FOR CREEP CRACK GROWTH TESTING OF INDUSTRIAL SPECIMENS
Dogan B. (Germany), Nikbin K. (UK), Petrovski B. (Germany), Dean D. (UK)
- 02,40 pm PERFORMANCE OF CREEP CRACK GROWTH ON W STRENGTHENED 9-12Cr STEEL
Kobayashi K.I., Shimizu S., Fuji A., Yokobori Jr. A.T., Hirohashi M. (Japan)
- 03,00 pm APPLICATION OF NON-CONTACT STRAIN MEASUREMENT TECHNIQUES TO A SINGLE CRYSTAL ALLOY AT ELEVATED TEMPERATURES
Lempidaki D.E., Busso E.P., O'Dowd N.P. (UK)
- 03,20 pm CRACK INITIATION AND DEFECT ASSESSMENT AT HIGH TEMPERATURES
Dogan B., Petrovski B., Ceyhan U. (Germany)

Genova Room

Topic 30 (NANO): NANO- OR MICRO-SCALE

SS 1 - 1: Nanoindentation of Engineering and Biological Materials

Chairman: Dao M. (USA)

- 02,00 pm INDENTATION CREEP OF POLYMERIC MATERIALS: EXPERIMENTAL AND ANALYSIS
Zeng K., Zhang Y.-W. (Singapore)
- 02,20 pm EXTRACTING MECHANICAL PROPERTIES USING REVERSE ANALYSIS OF SINGLE AND DUAL SHARP INDENTATION
Dao M., Chollacoop N., Suresh S. (USA)
- 02,40 pm NEW SCHEMES FOR COMPUTATIONAL MODELLING OF SIZE-DEPENDENT CONICAL INDENTATION
Cao Y.P., Lu J. (France)
- 03,00 pm THE INDENTATION FRACTURE TECHNIQUE FOR MEASUREMENTS OF FILM STRESSES
Zhang T.-Y. (China)
- 03,20 pm THEORETICAL AND COMPUTER MODELLING OF DEBONDING MECHANISMS IN FIBROUS MICRO- AND NANO-COMPOSITES
Rushchitsky J.J. (Ukraine), Guz I.A. (UK)

02,00-03,40 pm

Catania Room

Topic 4D (SCALE): SCALING LAWS & SIZE EFFECTS

**MS 1 - 1: Complexity, Scaling and Non-Linearity
in the Mechanics of Advanced Materials**

Chairlady: Botvina L.R. (Russia)

- 02,00 pm FRACTURE STRENGTH OF NANOTUBES
Ruoff R.S. (USA), Calabri L. (USA), Ding W. (USA), Pugno N.M. (Italy)
- 02,40 pm ATOMISTIC SIMULATIONS ON FRACTURE EVENTS IN
NANOSTRUCTURED SILICON CARBIDE
Mattoni A., Ippolito M., Colombo L., Cleri F. (Italy)
- 03,00 pm COUPLED ATOMISTIC-MESOSCOPIC MODEL OF POLYCRYSTALLINE
PLASTICITY
Cleri F., D'Agostino G., Colombo L. (Italy)
- 03,20 pm STRESS AND STRAIN FIELDS OF A CRACK-INCLUSION PAIR IN
 β -SiC: AN ATOMISTIC INVESTIGATION OF NONLINEARITY EFFECTS
Mattoni A., Ippolito M., Colombo L., Cleri F. (Italy)

Bologna Room

Topic 04 (CER): CERAMICS

MS 1 - 1: Mechanical Reliability of Modern Ceramic Materials

Chairman: Morrell R. (UK)

- 02,00 pm FAILURE OF CERAMICS UNDER CONCENTRATED LOADS
Fett T., Munz D. (Germany)
- 02,40 pm PREVENTING CONTACT LOADING INDUCED SURFACE FAILURE OF
CERAMIC COMPONENTS BY A SHOT PEENING TREATMENT
Pfeiffer W., Frey T. (Germany)
- 03,00 pm CRITICAL FLAW SIZE REDUCTION IN Si₃N₄-TIN COMPOSITES
FOR WEAR APPLICATIONS
Blugan G., Kuebler J. (Switzerland)
- 03,20 pm THE EFFECT OF GLASS COMPOSITION ON CREEP DAMAGE
DEVELOPMENT IN SILICON NITRIDE CERAMICS
*Lofaj F. (Slovakia), Wiederhorn S.M. (USA), Dorcáková F. (Slovakia),
Hoffmann M.J. (Germany)*

Monday, March 21

04,10-05,50 pm

04,10-05,50 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 2: Computational Fracture Mechanics

Chairman: Zavarise G. (Italy)

- 04,10 pm A COMPUTATIONAL STUDY OF THE FRACTURE BEHAVIOUR OF CONCRETE IN A MODIFIED SPLIT HOPKINSON BAR TEST
Pedersen R.R., Sluys L.J., Weerheijm J., Simone A. (The Netherlands)
- 04,30 pm COMPUTATION OF TWO DIMENSIONAL J-INTEGRAL IN THE CASE OF LARGE STRAINS
Horváth Á. (Hungary)
- 04,50 pm APPROPRIATE EXTENDED FUNCTIONS FOR X-FEM SIMULATION OF PLASTIC FATIGUE CRACK GROWTH
Elguedj T., Gravouil A., Combescure A. (France)
- 05,10 pm STOCHASTIC CLUSTERING OF PHONON AND PHASON MODES AROUND THE TIP OF A CRACK IN ICOSAHEDRAL QUASICRYSTALS
Mariano P.M., Stazi F.L., Gioffrè M., Augusti G. (Italy)
- 05,30 pm THERMO-MECHANICAL ANALYSIS OF ELASTIC CRACKS IN HETEROGENEOUS MATERIALS BY FEM AND VCFEM
Bruno L., Furguele F.M., Maletta C. (Italy)

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 1 - 2: Fatigue Mechanisms and Modeling

Chairman: Dodds R. (USA)

- 04,10 pm FATIGUE OF NANOSTRUCTURED METALS AND ALLOYS
Hanlon T., Suresh S. (USA)
- 04,30 pm MODELING FATIGUE CRACK GROWTH IN CRYSTALLINE SOLIDS WITH DISCRETE DISLOCATION PLASTICITY
Balint D.S., Deshpande V.S. (UK), Needleman A. (USA), Van der Giessen E. (The Netherlands)
- 04,50 pm EFFECTS OF FOREIGN OBJECT DAMAGE (FOD) ON THE FATIGUE LIMIT STRENGTH OF Ti-6Al-4V
Nicholas T., Thompson S.R., Porter W.J., Buchanan D.J. (USA)
- 05,10 pm FATIGUE DAMAGE ACCUMULATION MECHANISMS IN STRUCTURAL FILMS
Muhlstein C.L. (USA)
- 05,30 pm ANOMOLOUS FATIGUE CRACK GROWTH PHENOMENA IN HIGH-STRENGTH STEEL
Forth S.C., James M.A., Johnston W.M., Newman Jr. J.C. (USA)

04,10-05,50 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 1 - 2: Mesofracture Mechanics

Chairman: Spyropoulos C.P. (Greece)

- 04,10 pm POLING PARALLEL TO CRACK IN MAGNETOELECTROELASTIC COMPOSITE SUBJECTED TO ANTI-PLANE SHEAR
Spyropoulos C.P. (Greece)
- 04,30 pm POLING EFFECTS ON MODE I CRACK INITIATION OF MAGNETOELECTROELASTIC MATERIALS
Sih G.C. (China, USA), Yuh S.H.Y. (Japan)
- 04,50 pm INFLUENCE OF VOLUME FRACTION ON CRACKING CHARACTERISTICS OF MAGNETOELECTROELASTIC COMPOSITES
Yuh S.H.Y. (Japan), Sih G.C. (China, USA)
- 05,10 pm STABLE EXTENSION UNDER NET SECTION YIELDING FOR 2024-T3 ALUMINUM: APPLICATION OF STRAIN ENERGY DENSITY
Jeong D.Y. (USA)
- 05,30 pm DUCTILE TO BRITTLE TRANSITION OF INTER PURE AL SHEET CONSTRAINED BY PARALLEL BI-INTERFACE WITH HIGH STRENGTH AL ALLOY
Sun J., Han L.H., Li L. (China)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 2: Physics and Scaling in Fracture

Chairman: Hu X. (Australia)

- 04,10 pm MULTI-SCALE MODELING OF DEFORMATION IN POLYCRYSTALLINE THIN METAL FILMS
Hartmaier A., Buehler M.J., Gao H. (Germany)
- 04,30 pm FRACTURE IN TWO DIMENSIONS (IN PAPER): ACOUSTIC EMISSION STUDIES AND THEORETICAL LESSONS
Salminen L.I., Rosti J., Pulakka J.M., Alava M.J. (Finland)
- 04,50 pm CONSEQUENCES OF ACOUSTIC EMISSION ON CRACK SPEED AND ROUGHNESS EXPONENT IN BRITTLE DYNAMIC FRACTURE
Parisi A. (France), Ball R.C. (UK)
- 05,10 pm IMPULSIVE NUCLEATION AND FRACTURE OF BRITTLE MATERIALS BY NONLINEAR SURFACE ACOUSTIC WAVES
Hess P., Lomonosov A.M., Lucza T. (Germany)
- 05,30 pm THREE DIMENSIONAL CRACK DETECTION IN HARDENED CEMENT PASTES USING SYNCHROTRON-BASED COMPUTER MICROTOMOGRAPHY (SR μ CT)
Trtik P., van Mier J.G.M., Stampanoni M. (Switzerland)

04,10-05,50 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

MS 1 - 2: Delamination Fracture in Heterogeneous Materials and Structures

Chairlady: Massabò R. (Italy)

- 04,10 pm A MICROMECHANICS APPROACH TO QUANTIFY STRENGTH MISMATCH EFFECTS ON FRACTURE BEHAVIOR OF INTERFACE CRACKS
Ruggieri C. (Brazil)
- 04,30 pm MORPHOLOGICAL STABILITY OF MULTILAYER SYSTEMS
Sridhar N., Anderson P.M., Misra A., Cox B.N. (USA)
- 04,50 pm CRACK LENGTH DETERMINATION DIFFICULTIES IN COMPOSITES – THEIR EFFECT ON TOUGHNESS EVALUATION
Blackman B.R.K., Williams J.G. (UK)
- 05,10 pm EXPERIMENTAL DETERMINATION OF CRACK DRIVING FORCES IN INTEGRATED STRUCTURES
He J., Xu G., Suo Z. (USA)
- 05,30 pm APPLICATION OF COHESIVE ZONE MODELS TO FATIGUE AND FRACTURE IN COMPOSITES AND ADHESIVE JOINTS
Spearing S.M. (UK)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 2: Damage Mechanics

Chairman: Jirasek M. (Czech Republic)

- 04,10 pm A GRADIENT DAMAGE MODEL FOR DUCTILE FRACTURE
Lorentz E., Cano V. (France)
- 04,30 pm LOCAL SECOND GRADIENT MODELS AND DAMAGE MECHANICS: APPLICATION TO CONCRETE
Kotronis P., Chambon R., Mazars J. (France), Collin F. (Belgium)
- 04,50 pm FORMULATION OF CONTINUOUS/DISCONTINUOUS GALERKIN METHODS FOR STRAIN GRADIENT-DEPENDENT DAMAGE
Molari L. (Italy), Garikipati K. (USA), Wells G.N. (The Netherlands)
- 05,10 pm NONLOCAL COMPUTATIONAL METHODS APPLIED TO COMPOSITE STRUCTURES
Germain N., Feyel F., Besson J. (France)
- 05,30 pm AN IMPLICIT GRADIENT STRESS FAILURE CONDITION
Tovo R., Livieri P., Benvenuti E. (Italy)

04,10-05,50 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

SS 1 - 2: Metallic Materials

Chairman: Pardoen T. (Belgium)

- 04,10 pm OBSERVATIONS OF DUCTILE FRACTURE PROCESSES UNDER VERY LOW TRIAXIALITY IN QUENCHED AND TEMPERED VAR STEEL AND PRELIMINARY INTERPRETATION
Cannizzaro D. (Switzerland), Giovanola J.H. (Switzerland), Doglione R. (Italy), Rossoll A. (Switzerland)
- 04,30 pm THE EXPERIMENTAL CHARACTERIZATION OF LOCAL FRACTURE PROPERTIES
Kolednik O., Sabirov I., Unterweger K. (Austria)
- 04,50 pm APPLICATION OF LOCAL CONCEPTS IN THE AUTOMOTIVE INDUSTRY
Schmitt W., Benevolenski O., Brehm H., Walde T. (Germany)
- 05,10 pm LOCAL CRITERIA OF BRITTLE AND DUCTILE FRACTURE AND APPLICATION OF LOCAL APPROACH TO FRACTURE MECHANICS PROBLEMS
Margolin B.Z., Gulenko A.G., Kostylev V.I., Shvetsova V.A. (Russia)
- 05,30 pm MODELLING OF FRACTURE FOR AUSTENITIC MATERIALS WITH FERRITIC PHASE ON THE BASIS OF LOCAL APPROACH
Margolin B.Z., Shvetsova V.A., Kostylev V.I. (Russia)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 2: Advances In Dynamic Failure Mechanics

Chairman: Canteli A.F. (Spain)

- 04,10 pm CRACK-LIKE AND PULSE-LIKE DYNAMIC FRICTIONAL SLIDING
Coker D., Lykotrafitis G., Needleman A., Rosakis A.J. (USA)
- 04,30 pm FINITE ELEMENT MODELING OF DYNAMIC INTERFACIAL RUPTURE AND SLIDING
Coker D., Rosakis A.J., Needleman A. (USA)
- 04,50 pm THERMOMECHANICAL RESPONSES OF THE PLASTIC DEFORMATION FOR FCC METALS AT LOW AND HIGH STRAIN RATES AND TEMPERATURES
Abed F.H., Voyiadjis G.Z. (USA)
- 05,10 pm DISCUSSION ON SCALE EFFECT IN DYNAMIC FRAGMENTATION
Simonov I.V. (Russia), Pugno N. (Italy)
- 05,30 pm SIMULATION OF IMPACT AND FRAGMENTATION WITH THE MATERIAL POINT METHOD
Banerjee B., Guilkey J.E., Harman T.B., Schmidt J.A., McMurtry P.A. (USA)

04,10-05,50 pm

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

MS 1 - 2: Structural Integrity of Transportation Systems

Chairman: Newman Jr. J.C. (USA)

- 04,10 pm FEDERAL AVIATION ADMINISTRATION ROTORCRAFT DAMAGE TOLERANCE RESEARCH
Le D.D., Cuevas E. (USA)
- 04,30 pm EFFECT OF SHOT PEENING ON THE FATIGUE ENDURANCE AND FATIGUE CRACK GROWTH RATE OF 7050 & 7075 ALUMINUM ALLOYS
Locke J.E., Kumar B., Salah L. (USA)
- 04,50 pm PROBABILISTIC FATIGUE ANALYSIS FOR STRUCTURAL HEALTH MONITORING
Kulkarni S.S., Li-Sun, Moran B., Krishnaswamy S., Achenbach J.D. (USA)
- 05,10 pm ON A BIMODAL REPRESENTATION OF SMALL FATIGUE CRACK SCATTER
Carlson R.L., Cappelli M.D., Kardomateas G. (USA)
- 05,30 pm AN ALTERNATIVE FULLY STOCHASTIC APPROACH TO DETERMINE THE LIFETIME AND INSPECTION SCHEME OF A COMPONENT
Grooteman F.P. (The Netherlands)

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

MS 1 - 2: Failure of Structural Materials

Chairman: Sture S. (USA)

- 04,10 pm APPLICATION OF MIXED-MODE FRACTURE MECHANICS IN GEOTECHNICAL ENGINEERING
Kim T. (South Korea), Sture S. (USA)
- 04,30 pm COMPACTION LOCALIZATION IN POROUS SANDSTONE: ACOUSTIC EMISSION ACTIVITY, MICROSTRUCTURAL DEVELOPMENT AND DISCRETE ELEMENT SIMULATION
Wang B.S., Chen Y. (China), Wong T.-F. (USA)
- 04,50 pm FORMULATION AND IMPLEMENTATION OF A STRONG DISCONTINUITY MODEL FOR GRANULAR ROCKS INCORPORATING THE EFFECT OF SLIP SPEED ON FRICTIONAL RESISTANCE
Borja R.I., Foster C.D., Regueiro R.A. (USA)
- 05,10 pm COMPARISON OF DOUBLE AND SINGLE BONDED REPAIRS TO SYMMETRIC COMPOSITE STRUCTURES: A NUMERICAL ANALYSIS
Bachir Bouiadjra B., Belhouari M., Serier B., Ouinas D. (Algeria)
- 05,30 pm A MECHANISM OF FAILURE OF CONCRETE AND ROCK IN COMPRESSION
Dyskin A.V. , Pasternak E. (Australia)

04,10-05,50 pm

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

MS 1 - 2: Fracture Mechanics of Cementitious Materials

Chairman: Mechtcherine V. (Germany)

- 04,10 pm DEVELOPMENT OF A FIBRE OPTIC CRACK SENSOR FOR CONCRETE STRUCTURES
Leung C.K.Y., Wan K.T., Jiang Y. (China)
- 04,30 pm MONITORING STRAIN IN ENGINEERED CEMENTITIOUS COMPOSITES USING WIRELESS SENSORS
Hou T.-C., Lynch J.P. (USA)
- 04,50 pm HOW CRACKS MODULATE NONLINEAR ACOUSTIC SIGNALS
Wu H.-C., Warnemuende K. (USA)
- 05,10 pm AN ANALYSIS OF DISTINCTION BETWEEN LOADING MODE AND FRACTURE MODE
Sun Z., Rao Q., Chen F. (China)
- 05,30 pm STRUCTURAL AND RHEOLOGICAL CHARACTERIZATION OF VEGETABLE FIBERS REINFORCED CONCRETE PLASTER
Djoudi A., Khenfer M.M. (Algeria)

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

SS 1 - 2: Analytical Models

Chairman: Karihaloo B.L. (UK)

- 04,10 pm DISLOCATION MODEL OF AN ASYMMETRIC WEAK ZONE FOR PROBLEMS OF INTERACTION BETWEEN CRACK-LIKE DEFECTS
Simonov I.V. (Russia), Karihaloo B.L. (UK)
- 04,30 pm DYNAMIC ESHELBY TENSORS AND ASSOCIATED SOLUTION OF THE INHOMOGENEOUS HELMHOLTZ EQUATION FOR ELLIPSOIDAL INCLUSIONS
Michelitsch T.M. (UK), Wang J., Gao H. (Germany), Levin V.M. (Mexico)
- 04,50 pm MULTISCALE MODELLING AND REPRESENTATIVE VOLUMES: LINEAR-ELASTICITY AND SOFTENING
Gitman I.M., Askes H., Sluys L.J. (The Netherlands)
- 05,10 pm A PROBABILISTIC MODEL FOR THE FORMATION AND PROPAGATION OF CRACK NETWORKS IN HIGH CYCLE FATIGUE
Seyedi M., Malésys N., Vincent L., Hild F. (France)
- 05,30 pm A ONE-DIMENSIONAL INTRODUCTION TO CHEMICAL STRAINS AND STRESSES WITH APPLICATIONS TO DIFFUSION IN CRACKED SOLIDS
Wu C.H., Liu P. (USA)

04,10-05,50 pm

Napoli Room

**Topic 20 (CREEP): HIGH TEMPERATURE & CREEP
MS 1 - 2: Mechanisms and Standardization under Creep
and Fatigue Conditions**
Chairman: Saxena A. (USA)

- 04,10 pm ACQUISITION AND ANALYSIS OF SHORT-TERM CREEP CURVES FOR PREDICTION OF LONG -TERM ENGINEERING DESIGN DATA
Wilshire B., Burt H. (UK)
- 04,50 pm SIMULATION OF CREEP CRACK GROWTH OF A DIRECTIONALLY-SOLIDIFIED Ni-BASE SUPERALLOY
Gordon A.P., Shenoy M.M., McDowell D.L. (USA)
- 05,10 pm HIGH-TEMPERATURE CYCLIC CREEP AND FRACTURE BEHAVIOR OF Cu-SiO₂ BICRYSTALS
Miura H., Ito Y., Sakai T. (Japan)
- 05,30 pm INFLUENCE OF HEATS, HEAT-TREATMENTS AND TESTING METHODS ON HIGH TEMPERATURE FATIGUE OF 2.25Cr-1Mo STEELS
Yamaguchi K., Hayakawa M., Kimura M., Kobayashi K. (Japan)

Genova Room

**Topic 30 (NANO): NANO- OR MICRO-SCALE
SS 1 - 2: Nanoindentation of Engineering and Biological
Materials**
Chairman: Lim C.T. (Singapore)

- 04,10 pm EXTRACTION OF PLASTIC PROPERTIES FROM THE INSTRUMENTED INDENTATION DATA: CURRENT STATUS
Ramamurty U. (India), Chollacoop N. (USA)
- 04,30 pm NANOINDENTATION STUDY OF NORMAL AND OSTEOPOROTIC BONES
Lim C.T., Omar B.H.B., Goh J.C.J. (Singapore)
- 04,50 pm MECHANICAL PROPERTIES MEASUREMENT OF MICROSCALE MATERIALS FOR MEMS APPLICATION
Higo Y., Halford T.P., Takashima K. (Japan)
- 05,10 pm DETERMINATION OF CONSTITUTIVE PARAMETERS FOR SELF-SIMILAR INDENTATION CREEP AND ITS APPLICATIONS
Takagi H., Fujiwara M. (Japan), Dao M. (USA)
- 05,30 pm COMPARATIVE STUDY OF DEFORMATION AND FAILURE BEHAVIOR OF CONVENTIONAL AND NANOCRYSTALLINE MAGNESIUM ALLOYS
Yan C., Ye L., Mai Y.-W. (Australia), Lu L., Lai M.O. (Singapore)

04,10-05,50 pm

Catania Room

Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS

**MS 1 - 2: Complexity, Scaling and Non-Linearity
in the Mechanics of Advanced Materials**

Chairman: Hansen A. (Norway)

- 04,10 pm FRACTURE ROUGHNESS FOR THE TWO-DIMENSIONAL CENTRAL FORCE MODEL
Bakke J.Ø.H., Ramstad T., Hansen A. (Norway)
- 04,30 pm SCALING PROPERTIES OF THE THREE DIMENSIONAL FUSE MODEL AS A MODEL FOR BRITTLE FRACTURE
Ramstad T., Hansen A. (Norway)
- 04,50 pm ROUGHNESS OF BRITTLE CRACK INTERFACES IN BUCKLING BEAM LATTICES
Skjetne B., Helle T., Hansen A. (Norway)
- 05,10 pm METHOD FOR CHARACTERIZING THE FRACTURE SURFACE USING A TWO-DIMENSIONAL LOCAL HURST EXPONENT, AND ITS APPLICATION TO QUANTITATIVE EVALUATION OF STRETCHED ZONE WIDTH
Yamagiwa K., Takanashi M., Izumi S., Sakai S. (Japan)
- 05,30 pm FRACTURE SURFACE CHARACTERIZATION OF POROUS MATERIALS: FRACTAL GEOMETRY VS. AMT (ANGLE MEASURE TECHNIQUE)
Kurcheryavski S. (Russia), Esbensen K.H. (Denmark)

Bologna Room

Topic 04 (CER): CERAMICS

MS 1 - 2: Mechanical Reliability of Modern Ceramic Materials

Chairman: Danzer R. (Austria)

- 04,10 pm DESIGN AND RELIABILITY OF CERAMIC COMPONENTS FOR AUTOMOTIVE APPLICATIONS
Knoblauch V., Speicher R., Schneider G.A. (Germany)
- 04,30 pm THE RELIABILITY OF WEIBULL ESTIMATORS AND THEIR RELATION TO DEFECTS IN BRITTLE MATERIALS
Loidl D., Peterlik H. (Austria)
- 04,50 pm A FAST DESIGN-TOOL FOR CERAMICS UNDER STATIC AND CYCLIC CONTACT LOADING
Huber N., Licht V., Hegadekatte V., Kraft O. (Germany)
- 05,10 pm RELIABILITY ASSESSMENT OF A SiC BASED COMPONENT FOR HIGH TEMPERATURE APPLICATION
Trentini E., Finelli A., Labanti M., Sangiorgi S. (Italy)
- 05,30 pm IN-SITU STRENGTH OF ALUMINA GREEN COMPACT AT ELEVATED TEMPERATURE DURING SINTERING
Nambu S., Enoki M., Takahashi F. (Japan)

Tuesday, March 22

10,30 am-12,10 pm

10,30 am-12,10 pm

Auditorium

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 3: Physics and Scaling in Fracture

Chairman: Gerberich W.W. (USA)

- 10,30 am STABILITY OF A DYNAMIC CRACK PROPAGATING IN AN ELASTIC STRIP
Movchan N.V., Movchan A.B., Willis J.R. (UK)
- 11,10 am THERMAL "SELF-ARREST" OF A CRACK DURING FRACTURE:
MULTI-ARREST MODES
Kotin D.A., Maksimov I.L. (Russia)
- 11,30 am DYNAMIC STRAIN AGEING EFFECTS IN AN EXTRUDED AA7030 ALLOY
SUBJECTED TO TENSILE DEFORMATION
Hörnqvist M., Karlsson B. (Sweden)
- 11,50 am INSTABILITIES OF DYNAMIC CRACK USING A PHASE FIELD MODEL OF
BRITTLE FRACTURE UNDER INPLANE LOADING
Hervé H., Levine H. (USA)

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 3: Computational Fracture Mechanics

Chairman: Karihaloo B.L. (UK)

- 10,30 am THE EXTENDED FINITE ELEMENT METHOD FOR STATIC AND DYNAMIC
CRACK PROPAGATION
Belytschko T., Areias P., Wang H.W., Xu J.X. (USA)
- 11,10 am A GLOBAL ENERGY CRITERION FOR CRACK PROPAGATION USING THE
EXTENDED FINITE ELEMENT METHOD
Dumstorff P., Meschke G. (Germany)
- 11,30 am A MULTI-SCALE APPROACH FOR THE SIMULATION OF CRACKS
Wyart E., Martiny P., Remacle J.-F., Pardoën T., Lani F. (Belgium)
- 11,50 am COHESIVE CRACK-TIP ELEMENT FOR XFEM
Asferg J.L., Poulsen P.N., Nielsen L.O. (Denmark)

10,30 am-12,10 pm

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 1 - 3: Fatigue Mechanisms and Modeling

Chairman: Ritchie R. (USA)

- 10,30 am 3-D EFFECTS ON FATIGUE CRACK CLOSURE PROCESSES IN SMALL-SCALE YIELDING
RoyChowdhury S., Dodds Jr. R.H. (USA)
- 10,50 am ENGINEERING ASPECTS ON FATIGUE CRACK GROWTH UNDER COMPLEX LOADING
Nilsson F., Olsson M., Alfredsson B. (Sweden)
- 11,10 am RESIDUAL STRESSES AND FATIGUE PERFORMANCE
James M.N. (UK), Hughes D.J., Chen Z. (France), Hattingh D.G. (South Africa), Webster P.J. (UK)
- 11,30 am PLASTICITY EFFECTS ON FATIGUE CRACK GROWTH AT HOLES
McClung R.C., Gardner B.M., Lee Y.-D., McMaster F.J. (USA)
- 11,50 am EFFECT OF LARGE LOCAL PLASTIC FLOW ON THE FATIGUE LIFE OF METALLIC MATERIALS
Wang G.S., Blom A.F. (Sweden)

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 1 - 3: Mesofracture Mechanics

Chairman: Nobile L. (Italy)

- 10,30 am PREDICTION OF MECHANICAL PROPERTIES OF POLYCHLOROPRENE DURING THERMO-OXIDATIVE AGING
Ha Anh T., Vu-Khanh T. (Canada)
- 10,50 am FRACTURE OF RUBBERS UNDER MIXED MODE CONDITIONS
Nait Abdelaziz M., Ait Hocine N., Bechet F. (France)
- 11,10 am EFFECT OF STRAIN HARDENING LAYER ON PITTING FORMATION UNDER ROLLING CONTACT
Chue C.H., Chung H.H. (Taiwan)
- 11,30 am ON THE ENERGY RELEASE RATE OF FINITE CRACKED BODIES
Chao C.K., Chang R.C. (Taiwan)
- 11,50 am FATIGUE CRACK GROWTH IN STRUCTURAL ALLOY AS PREDICTED BY THE STRAIN ENERGY DENSITY THEORY
Nobile L., Carloni C., Nobile M. (Italy)

10,30 am-12,10 pm

Parigi Room

Topic 32 (NLMF): NONLINEAR FRACTURE MECHANICS

MS 1 - 1: Nonlinear Fracture Mechanics

Chairman: Brocks W. (Germany)

- 10,30 am CRACK KINKING IN LASER WELDS - EXPERIMENTS AND MODELLING
Brocks W., Nègre P., Steglich D. (Germany)
- 10,50 am NON-LINEAR PHOTOELASTICITY ANALYSIS OF FRACTURE MECHANICS PROBLEMS
Albaut G.N. (Russia)
- 11,10 am EVOLUTION OF THE EQUILIBRIUM STATE OF THE CURVILINEAR CRACKS WITH SURFACES INTERACTING WITH FRICTION DURING THE LOADING PROCESS
Andreev A.V. (Russia)
- 11,30 am WARM PRE-STRESS EFFECTS ON CLEAVAGE FRACTURE IN CENTER CRACK SPECIMEN
Ayatollahi M.R., Aliniazi A., Mostafavi M. (Iran)
- 11,50 am NONLINEAR EFFECTS IN DYNAMIC FRACTURE
Buehler M.J. (Germany), Abraham F.F. (USA), Gao H. (Germany)

Roma Room

Topic 05 (COMPO): COMPOSITES

MS 1 - 3: Delamination Fracture in Heterogeneous Materials and Structures

Chairman: Cox B.N. (USA)

- 10,30 am MICRO AND MESO COMPUTATIONAL DAMAGE MODELLING FOR DELAMINATION PREDICTION
Ladevèze P., Lubineau G., Violeau D., Marsal D. (France)
- 11,10 am MULTIPLE DELAMINATION OF LAMINATED STRUCTURES
Andrews M.G. (USA), Massabò R. (Italy), Cox B.N. (USA)
- 11,30 am FRACTURE IN THIN-FILM STRUCTURES FOR DEVICE TECHNOLOGIES: NEW MATERIAL AND LENGTH SCALE CHALLENGES
Litteken C.L., Dauskardt R.H. (USA)
- 11,50 am COMPUTATIONAL MODELS FOR DELAMINATION FRACTURE
de Borst R. (The Netherlands, France), Remmers J.J.C. (The Netherlands)

10,30 am-12,10 pm

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 3: Damage Mechanics

Chairman: Voyiadjis G.Z. (USA)

- 10,30 am A NONLOCAL INTEGRAL APPROACH TO ELASTIC-DAMAGE INTERFACE MODELLING
Borino G., Failla B., Parrinello F. (Italy)
- 10,50 am REGULARIZED DAMAGE MODEL BASED ON NONLOCAL DISPLACEMENT FIELD
Marfia S. (Italy), Jirásek M. (Czech Republic)
- 11,10 am NONLOCAL DAMAGE-PLASTICITY MODEL FOR FAILURE OF PLAIN CONCRETE
Grassl P. (Sweden), Jirásek M. (Czech Republic)
- 11,30 am NON-LOCAL DESCRIPTION OF ANISOTROPIC DAMAGE AND FRACTURE IN ELASTIC-BRITTLE STRUCTURES UNDER PLANE-STRESS CONDITIONS
Skrzypek J., Kuna-Ciskal H., Egner W. (Poland)
- 11,50 am ON NONLOCALITY AND LOCALITY: DIFFERENTIAL AND DISCRETE FORMULATIONS
Ferretti E. (Italy)

Atene Room

Topic 27 (MET): METALLIC MATERIALS

SS 2 - 1: Micromechanics of Fracture in Spatially Heterogeneous Materials

Chairman: Firrao D. (Italy)

- 10,30 am MODELING DAMAGE LINKAGE IN HETEROGENEOUS ALLOYS AND METAL MATRIX COMPOSITES
Wilkinson D.S., Gammage J. (Canada), Brechet Y. (France), Embury D. (Canada)
- 10,50 am HOW MUCH INPUT IS NEEDED FROM THE MICROSTRUCTURE TO MODEL DUCTILE FRACTURE?
Benzerga A.A. (USA), Besson J., Pineau A. (France)
- 11,10 am FRACTURE TOUGHNESS OF PLASTIC-MOLD STEELS: DEPENDENCE UPON HEAT TREATMENT AND MICROSTRUCTURE
Firrao D., Matteis P., Vassallo M. (Italy)
- 11,30 am A WAY TO PUT AN END TO AN UNJUSTIFIED OVERCONSUMPTION OF PLASTIC STEELS AND ALLOYS IN INDUSTRY
Chechin E.V. (Ukraine)
- 11,50 am FRACTURE TOUGHNESS OF AISI D6 TOOL STEEL AS RECEIVED AND WITH HEAT TREATMENT
Bressan J.D., Kohls D., Tramontin A. (Brazil)

10,30 am-12,10 pm

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 3: Advances In Dynamic Failure Mechanics

Chairman: Amde A.M. (USA)

- 10,30 am INFLUENCE OF MICROSTRUCTURE ON DYNAMIC FRACTURES
Marder M. (USA)
- 11,10 am HYPERELASTICITY IN DYNAMIC FRACTURE: THE CHARACTERISTIC ENERGY LENGTH SCALE
Gao H., Buehler M.J. (Germany), Abraham F.F. (USA)
- 11,30 am TIME DISCONTINUOUS GALERKIN METHOD FOR DYNAMIC CRACK GROWTH USING X-FEM
Rethore J., Gravouil G., Combescure A. (France)
- 11,50 am COMPARISON BETWEEN DYNAMIC CRACK EQUATION AND SOME OF THE PUBLISHED EXPERIMENTS
Watanabe M., Oomoto M. (Japan)

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

MS 1 - 3: Structural Integrity of Transportation Systems

Chairman: Smith S.W. (USA)

- 10,30 am THE CTOA AND δ_5 STANDARDS FOR LOW-CONSTRAINT FRACTURE SPECIMENS
Newman Jr. J.C. (USA), Schwalbe K.-H. (Germany)
- 10,50 am STABLE CRACK EXTENSION AND CRACK TUNNELING IN AS-RECEIVED AND SURFACE-MACHINED 2024-T351 ALUMINUM SHEET
Sakhalkar A., Mahmoud S., Lease K. (USA)
- 11,10 am CTOA AS A DYNAMIC FRACTURE CRITERION
Kobayashi A.S. (USA)
- 11,30 am A RELATIONSHIP BETWEEN CONSTRAINT AND THE CRITICAL CRACK TIP OPENING ANGLE
James M.A., Johnston W.M. (USA)
- 11,50 am THREE-DIMENSIONAL CRACK GROWTH SIMULATIONS: COMPUTATIONAL ASPECTS AND ANALYSIS OF CRACK TUNNELING TO QUANTIFY COD AS A FUNCTION OF CONSTRAINT
Sutton M.A., Deng X., Zuo J. (USA)

10,30 am-12,10 pm

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

MS 1 - 3: Failure of Structural Materials

Chairman: Manzari M. (USA)

- 10,30 am A CRITICAL STATE TWO-SURFACE MICROPOLAR PLASTICITY MODEL FOR SANDS
Manzari M.T., Dafalias Y.F. (USA)
- 10,50 am ANALYSIS OF DISCONTINUITIES IN FLUID-SATURATED MEDIA
Abellan M.-A. (France), de Borst R. (The Netherlands), Bergheau J.-M. (France)
- 11,10 am IMPROVEMENT OF CONCRETE DURABILITY BY BACTERIAL MINERAL PRECIPITATION
Ramakrishnan V., Panchalan R.K., Bang S.S. (USA)
- 11,30 am CRACK PROPAGATION IN POROELASTIC FLUID-SATURATED SOLIDS AT INTERSONIC VELOCITIES
Loret B. (France), Radi E. (Italy)
- 11,50 am ONSET, GROWTH, PROGRESSION AND UNIFORMITY OF SHEAR BANDS IN DILATIVE SANDS
Rechenmacher A.L. (USA)

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

MS 1 - 3: Fracture Mechanics of Cementitious Materials

Chairman: Carmeliet J. (Belgium)

- 10,30 am CHARACTERIZATION OF FATIGUE FAILURE MECHANISM FOR CONCRETE AIRPORT PAVEMENT
Mu B., Shah S.P. (USA)
- 11,10 am RATE DEPENDENT LOAD-DEFORMATION RELATION FOR CONCRETE UNDER IMPACT TENSILE LOADING
Weerheijm J. (The Netherlands)
- 11,30 am STOCHASTIC MODEL OF MULTIPLE CRACKING PROCESS IN FIBER REINFORCED CEMENTITIOUS COMPOSITES
Kabele P., Stemberk M. (Czech Republic)
- 11,50 am A MICROSCOPIC APPROACH TO RATE EFFECT ON CONCRETE STRENGTH UNDER COMBINED LOAD
Dan Z., Qingbin L. (China)

10,30 am-12,10 pm

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

SS 2 - 1: Material Forces and Fracture Mechanics

Chairman: Kolednik O. (Austria)

- 10,30 am MATERIAL FORCE MODELS FOR CRACKS – INFLUENCES OF EIGENSTRAINS, THERMAL STRAINS & RESIDUAL STRESSES
Simha N.K. (USA), Kolednik O., Fischer F.D. (Austria)
- 10,50 am THERMOMECHANICS OF MOVING PHASE BOUNDARIES IN SOLIDS
Berezovski A. (Estonia), Maugin G.A. (France)
- 11,10 am SIZE EFFECT ON CRACK ANALYSIS BY STRAIN GRADIENT MATERIAL MODEL
Imatani S., Hatada K. (Japan), Maugin G.A. (France)
- 11,30 am APPLICATION OF DAMAGE MECHANICS IN PERCUSSIVE DRILLING MODELLING
Mikhailov S.E., Namestnikova I.V. (UK)
- 11,50 am ON THE SELF-FORCE OF A NON-UNIFORMLY MOVING DISLOCATION
Markenscoff X. (USA)

Napoli Room

Topic 20 (CREEP): HIGH TEMPERATURE & CREEP

MS 1 - 3: Mechanisms and Standardization under Creep and Fatigue Conditions

Chairman: Mc Dowell D.L. (USA)

- 10,30 am DEVELOPMENT OF A CREEP/FATIGUE CRACK GROWTH TESTING CODE OF PRACTICE FOR COMPONENTS
Nikbin K.M. (UK)
- 11,10 am A THERMOMECHANICAL FATIGUE CRACK INITIATION MODEL FOR DIRECTIONALLY-SOLIDIFIED Ni-BASE SUPERALLOYS
Gordon A.P., Shenoy M., Neu R.W. (USA)
- 11,30 am MINIATURISED CREEP TESTING USING THE SMALL PUNCH (SP) TEST TECHNIQUE
Stratford G.C. (UK), Di Persio F. (The Netherlands), Klaput J. (Poland)
- 11,50 am CREEP CRACK GROWTH PROPERTIES OF WELDED JOINTS FOR HIGH Cr FERRITIC STEEL
Tabuchi M., Ha J.C., Yokobori Jr. A.T. (Japan)

10,30 am-12,10 pm

Genova Room

**Topic 30 (NANO): NANO- OR MICRO-SCALE
SS 2 - 1: Strength and Stability of Nanoobjects**

Chairman: Morozov N. (Russia)

- 10,30 am GRADIENT THEORY AND ITS APPLICATIONS TO NANOMECHANICS
Aifantis E.C. (Greece, USA)
- 10,50 am CRACKING IN NANOSTRUCTURED Li-BATTERIES
Aifantis K.E. (UK), Dempsey J.P. (USA)
- 11,10 am NANOMACHINING FOR HIGH-RESOLUTION SCANNING OF
MAMMALIAN BRAIN MICRO STRUCTURE
McCormick B.H., Mayerich D.M. (USA), Wiercigroch M. (UK)
- 11,30 am FRACTURE OF BRITTLE AND DUCTILE CRYSTALS FOR THE GENERALIZED
STRESS STATE. STRENGTH AND DEFORMATION CRITERIA
Kornev V.M. (Russia)
- 11,50 am BUCKLING CRITERIA OF ATOMIC LATTICES
Korobeinikov S.N. (Russia)

Catania Room

**Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS
MS 1 - 3: Complexity, Scaling and Non-Linearity
in the Mechanics of Advanced Materials**

Chairman: Chudnovsky A. (USA)

- 10,30 am THE EFFECT OF MULTI SCALE DOMINATING REGION ON BRITTLE
FRACTURE
Yokobori Jr. A.T. (Japan)
- 11,10 am THEORETICAL AND NUMERICAL INVESTIGATION ON INTERNAL
INSTABILITY PHENOMENA IN COMPOSITE MATERIALS
Carpinteri A., Paggi M., Zavarise G. (Italy)
- 11,30 am FATIGUE DAMAGE ACCUMULATION IN UNIDIRECTIONAL COMPOSITE
(UD) UNDER APPLIED CYCLING TENSION LOAD
Krasnikovs A. (Latvia), Megnis M. (Denmark)
- 11,50 am TOWARDS A PHYSICAL DAMAGE VARIABLE FOR A HETEROGENEOUS
QUASI-BRITTLE MATERIAL
Landis E.N. (USA)

10,30 am-12,10 pm

Bologna Room

Topic 04 (CER): CERAMICS

MS 1 - 3: Mechanical Reliability of Modern Ceramic Materials

Chairman: Dusza J. (Slovakia)

- 10,30 am HIGH RELIABILITY CERAMIC LAMINATES BY DESIGN
Sglavo V.M., Bertoldi M. (Italy)
- 10,50 am FRACTURE BEHAVIOUR IN LAMINATED CERAMIC COMPOSITES
*De Portu G., Guicciardi S., Micele L. (Italy, Japan),
Fujimura F., Pezzotti G. (Japan)*
- 11,10 am FRACTURE CHARACTERISTICS OF TWO CARBON FIBRE REINFORCED CERAMICS
Dusza J. (Slovakia), Liedke V., Semerad E. (Austria), Weiss R. (Germany)
- 11,30 am THE FRACTURE OF THE POROUS CERAMIC AND ITS FORMULA MODEL
Okabe N., Tsutsumi M. (Japan)
- 11,50 am FRACTURE TOUGHNESS IN ADVANCED MONOLITHIC CERAMICS – SEP8 VERSUS SEVNB METHODS
Choi S.R., Gyekenyesi J.P. (USA)

Tuesday, March 22

02,00-03,40 pm

02,00-03,40 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 4: Computational Fracture Mechanics

Chairman: Belytschko T. (USA)

- 02,00 pm SIMULATION OF FATIGUE CRACK INITIATION AND PROPAGATION IN ALUMINUM ALLOYS USING REALISTIC MICROSTRUCTURES
Anagnostou E., Brahme A., Cornwell C., El-Dasher B.S., Fridy J., Horstemeyer M.F., Ingraffea A.R., Lee S.-B., Maniatty A., Noack R., Papazian J., Rollett A.D., Saylor D., Weiland H. (USA)
- 02,40 pm A WEAKEST-LINK ANALYSIS FOR FATIGUE STRENGTH OF COMPONENTS CONTAINING DEFECTS
Beretta S. (Italy), Chai G. (Sweden), Soffiati E. (Italy)
- 03,00 pm INVESTIGATIONS OF FAILURE BEHAVIOUR OF FLAWED STEEL SPECIMENS WITH ELECTRON BEAM WELDS (EBW)
Bajric A., Brocks W., Dahl W., Heyer J., Langenberg P. (Germany)
- 03,20 pm AN ENERGY-BASED CRACK GROWTH CRITERION FOR MODELLING ELASTIC-PLASTIC DUCTILE FRACTURE
Yang Z. (UK)

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 1 - 4: Fatigue Mechanisms and Modeling

Chairman: Dodds R. (USA)

- 02,00 pm TIME VS. CYCLE DEPENDENCE OF *EX VIVO* FATIGUE IN HUMAN CORTICAL BONE
Ritchie R.O., Nalla R.K., Kruzic J.J., Kinney J.H. (USA)
- 02,20 pm SIMULATING MICROSTRUCTURE-RELATED LCF VARIABILITY IN NICKEL-BASE SUPERALLOYS
Kumar R.S., McDowell D.L. (USA)
- 02,40 pm MECHANISMS OF FATIGUE DAMAGE FORMATION AND EVOLUTION IN Zr-BASED BULK METALLIC GLASS
Hess P.A., Menzel B., Dauskardt R.H. (USA)
- 03,00 pm CORRELATION OF THE STRESS RATIO EFFECTS ON FATIGUE CRACK PROPAGATION THRESHOLD USING A NEW PARAMETER
Zhang J.Z., Meng Z.X., He X.D., Du S.Y. (China)
- 03,20 pm A MECHANICS BASED STUDY OF THE FATIGUE CRACK GROWTH THRESHOLD SIZE EFFECT
Daniewicz S.R., Potirniche G.P., Johnston S.R. (USA)

02,00-03,40 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 1 - 4: Mesofracture Mechanics

Chairman: Tu S.T. (China)

- 02,00 pm SINGULARITY REPRESENTATION OF MULTIPLE SCALING IN MESOFRACTURE
Sih G.C. (China, USA), Tang X.S. (China)
- 02,20 pm DUAL SCALING OF MOVING CRACK WITH MACRO- AND MICRO-DAMAGE
Tang X.S. (China), Sih G.C. (China, USA)
- 02,40 pm CHARACTERIZATION OF CREEP BEHAVIOR OF CRACK IN NON-HOMOGENEOUS MATERIALS
Tu S-T., Xuan F.-Z., Chen J.-J. (China)
- 03,00 pm FREE SURFACE CRACKING DUE TO PITTING AND ROLLING
Chue C.H., Chung H.H. (Taiwan)
- 03,20 pm ELASTIC STUDY OF A CRACKED LAYER BONDED TO A VISCOELASTIC SUBSTRATE
Chao C.K., Hisao C.C. (Taiwan)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 4: Physics and Scaling in Fracture

Chairman: Hansen A. (Norway)

- 02,00 pm DETACHMENT WAVES AND THE ONSET OF FRICTIONAL SLIP
Rubinstein S.M., Cohen G., Fineberg J. (Israel)
- 02,40 pm EFFECT OF MATERIAL'S RANDOMNESS ON SCALING OF CRACK PROPAGATION IN CERAMICS
Silberschmidt V.V. (UK)
- 03,00 pm NUMERICAL AND PHYSICAL EXPERIMENTS ON SHEAR BANDING IN SANDSTONE
Fakhimi A. (Iran), Labuz J.F. (USA)
- 03,20 pm RUPTURE OF FRICTIONALLY HELD INCOHERENT INTERFACES UNDER DYNAMIC SHEAR LOADING
Lykotrafitis G., Rosakis A.J. (USA)

02,00-03,40 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

MS 1 - 4: Delamination Fracture in Heterogeneous Materials and Structures

Chairman: Spearing S.M. (UK)

- 02,00 pm DYNAMIC CRACK PROPAGATION IN A HETEROGENEOUS MATERIAL STRIP: STUDY OF THE BROBERG PROBLEM BY CONTINUUM AND ATOMISTIC METHODS
Gao H., Chen S., Buehler M.J. (Germany)
- 02,20 pm CRACK DEFLECTION IN CERAMIC LAMINATES
Leguillon D., Martin E., Tariolle S. (France)
- 02,40 pm IDENTIFICATION OF LAMINATE MECHANICAL PROPERTIES VIA EXTENDED KALMAN FILTER
Corigliano A., Mariani S. (Italy)
- 03,00 pm MODELLING DAMAGE EVOLUTION IN LAMINATED COMPOSITES USING COHESIVE ZONE MODELS
Yang Q., Cox B.N. (USA)
- 03,20 pm VARIATIONAL COHESIVE FRACTURE MODELS AND THREE-DIMENSIONAL CRACK TRACKING
Pandolfi A.(Italy), Ortiz M. (USA)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 4: Damage Mechanics

Chairman: Voyiadjis G.Z. (USA)

- 02,00 pm BRIDGING THE SCALES WITH STATISTICAL DAMAGE MECHANICS
Krajcinovic D., Rinaldi A. (USA)
- 02,20 pm A MULTI-SCALE METHOD FOR MASONRY COMPUTATIONS
Massart T.J. (Belgium), Peerlings R.H.J., Geers M.G.D. (The Netherlands)
- 02,40 pm MICRO-MACRO SCALE TRANSITION FOR DAMAGED VISCOELASTIC PARTICULATE COMPOSITES
Nadot-Martin C., Dragon A., Fanget A. (France)
- 03,00 pm ON VARIATIONAL FORMULATIONS FOR THE TRANSITION FROM ELASTO-DAMAGING TO ELASTO-FRACTURING BEHAVIOR
Benvenuti E., Tralli A. (Italy)
- 03,20 pm A 3D ISOTROPIC MESOMECHANICAL MODEL OF DEFORMATION AND CUMULATIVE DAMAGE OF CONCRETE
Kafka V., Vokoun D. (Czech Republic)

02,00-03,40 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

SS 2 - 2: Micromechanics of Fracture in Spatially Heterogeneous Materials

Chairman: Brechet Y. (France)

- 02,00 pm SHEAR LIP FORMATION IN NITRIDED BLUNT NOTCH THREE-POINT DIE STEEL SPECIMENS
Firrao D. (Italy)
- 02,40 pm MICROMECHANICS OF DUCTILE FRACTURE IN MULTIPHASE ALLOYS – APPLICATION TO CAST ALUMINUM ALLOY WITH PENNY SHAPE VOIDS
Pardoen T. (Belgium), Bréchet Y. (France), Huber G. (Germany)
- 03,00 pm A STUDY OF THE FRACTURE BEHAVIOR, DEFORMATION MECHANISMS, MICROSTRUCTURES, AND DUCTILITY OF PRECIPITATION STRENGTHENED ALUMINUM-LITHIUM ALLOYS
Fragomeni J.M. (USA)
- 03,20 pm STATIC AND DYNAMIC FRACTURE MECHANICS PARAMETERS OF MATERIAL IN THE HEAT-AFFECTED-ZONE
Sedmak S., Gerić K., Grabulov V., Burzić Z., Sedmak A. (Serbia and Montenegro)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 4: Advances in Dynamic Failure Mechanics

Chairman: Maji A.K. (USA)

- 02,00 pm TRANSIENT EFFECTS IN ELASTODYNAMIC FRACTURE OF GRADED MATERIALS
Shukla A., Jain N. (USA)
- 02,40 pm CRACK-LIKE TRANSITION WAVE IN LATTICES
Slepyan L.I. (Israel)
- 03,00 pm DYNAMIC FAILURE OF NANOSTRUCTURED METALS
Ramesh K.T. (USA)
- 03,20 pm DYNAMIC DEFORMATION AND FAILURE OF NANOWIRES
Liang W., Zhou M. (USA)

02,00-03,40 pm

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

MS 1 - 4: Structural Integrity of Transportation Systems

Chairman: Gallagher J.P. (USA)

- 02,00 pm APPLICATION OF CTOA/CTOD IN THE RESIDUAL STRENGTH ANALYSIS OF BUILT-UP AND INTEGRAL STRUCTURES
Seshadri B.R., Forth S.C., Johnston Jr. W.M., Domack M.S. (USA)
- 02,20 pm UNDERSTANDING OF ENVIRONMENTAL CRACKING IN AGING AIRCRAFT STRUCTURE
Piasek R.S., Smith S.W., Newman J.A., Willard S.A. (USA)
- 02,40 pm LOCALIZED CHEMICAL ENVIRONMENTS AND THE IMPLICATIONS ON FATIGUE IN AIRCRAFT STRUCTURES
Kelly R.G. (USA)
- 03,00 pm CHARACTERIZATION AND MODELING OF LOCALIZED CORROSION DAMAGE ACCUMULATION FOR AIRCRAFT STRUCTURAL INTEGRITY
Buchheit R.G., Birbilis N., Gambina F. (USA)
- 03,20 pm FATIGUE CRACK TIP DAMAGE-BASED MODELS IN STRUCTURAL PROGNOSIS
Agnew S.R., Ro Y.J., Begley M.R., Gangloff R.P. (USA)

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

MS 1 - 4: Failure of Structural Materials

Chairman: Chau K.T. (China)

- 02,00 pm ANALYSIS OF A FULL-SCALE BLAST TEST AND RETROFIT DESIGN
Maji A.K., Brown J.P. (USA)
- 02,20 pm COHESIVE ZONE MODELS IN THE CHARACTERISATION OF TOUGHNESS
Williams J.G., Hadavinia H., Kinloch A.J. (UK)
- 02,40 pm BEHAVIORS OF CONCRETE T-BEAMS PRESTRESSED WITH PARTIALLY BONDED CFRP TENDONS
Zhi F., Jian Y. (China)
- 03,00 pm FRACTURE AND FAILURE ANALYSIS OF STONE CLADDING ON BUILDING FACADES
Chau K.T. (China), Shao J.F. (France)
- 03,20 pm DAMAGE AND CREEP DEFORMATION IN BRITTLE ROCKS
Shao J.F. (France), Chau K.T., Feng X.T. (China)

02,00-03,40 pm

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

MS 1 - 4: Fracture Mechanics of Cementitious Materials

Chairman: Leung C.K.Y. (China)

- 02,00 pm PERFORMANCE OF RC BEAMS RETROFITTED WITH CARDIFRC® AFTER THERMAL CYCLING
Farhat F.G., Karihaloo B.L. (UK)
- 02,20 pm SUPPRESSION OF FRACTURE FAILURE OF STRUCTURES BY COMPOSITE DESIGN BASED ON FRACTURE MECHANICS
Li V.C., Wang S. (USA)
- 02,40 pm FRACTURE TESTING OF HYBRID-FIBRE CONCRETE
Stähli P., van Mier J.G.M. (Switzerland)
- 03,00 pm FRACTURE CHARACTERISTICS OF AGGREGATES SUBMITTED TO ALKALI SILICA REACTIONS
BenHaha M., Guidoum A., Scrivener K. (Switzerland)
- 03,20 pm TOUGHNESS OF CRACKED CONCRETE BEAMS POST-STRENGTHENED WITH FRP
Wu Z.J., Davies J.M. (UK)

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

SS 2 - 2: Material Forces and Fracture Mechanics

Chairman: Simha N.K. (USA)

- 02,00 pm INVERSE DISCONTINUITY FORMULATION OF FRACTURE
Fagerström M., Larsson R. (Sweden)
- 02,20 pm APPLICATION OF MATERIAL FORCES IN DEFECT MECHANICS
Mueller R., Gross D. (Germany)
- 02,40 pm ON RECENT PROGRESS IN THE THEORY AND NUMERICS OF MATERIAL FORCES
Denzer R., Steinmann P. (Germany)
- 03,00 pm INFLUENCE OF RESIDUAL STRESSES ON THE CRACK DRIVING FORCE IN BIMATERIALS WITH SHARP INTERFACE
Rakin M., Kolednik O. (Austria), Simha N.K. (USA), Fischer F.D. (Austria)
- 03,20 pm NON-LOCAL MODELING OF MATERIAL FORCES DURING DAMAGE AND FRACTURE
Svendsen B., Reusch F. (Germany)

02,00-03,40 pm

Napoli Room

**Topic 20 (CREEP): HIGH TEMPERATURE & CREEP
MS 1 - 4: Mechanisms and Standardization under Creep
and Fatigue Conditions**

Chairman: Wilshire B. (UK)

- 02,00 pm ELEVATED TEMPERATURE FATIGUE CRACK GROWTH MODEL FOR DS-GTD-111
Yoon K.B. (South Korea), Park T.G., Saxena A. (USA)
- 02,20 pm EXPERIMENTAL AND NUMERICAL INVESTIGATION ON THE CREEP CRACK GROWTH IN IN718
Lo Conte A. (Italy)
- 02,40 pm PREDICTION OF CREEP CRACK INITIATION USING A DAMAGE-BASED APPROACH
Davies C.M., Yatomi M., O'Dowd N.P., Nikbin K.M. (UK)
- 03,00 pm COMPARISON OF TWO CREEP CRACK GROWTH PARAMETERS, C^* AND Q^* , WITH F.E. ANALYSIS
Yatomi M. (Japan), Nikbin K.M. (UK), Yokobori Jr. A.T. (Japan)
- 03,20 pm CRACK GROWTH CHARACTERISTICS AND DAMAGE IN 12Cr STEEL UNDER HIGH TEMPERATURE CREEP AND CREEP-FATIGUE CONDITIONS
Yokota O., Sugiura R., Yoda M., Yokobori Jr. A.T., Yokobori T. (Japan)

Genova Room

**Topic 30 (NANO): NANO- OR MICRO-SCALE
SS 2 - 2: Strength and Stability of Nanoobjects**

Chairman: Aifantis E. (Greece)

- 02,00 pm STRENGTH AND STABILITY OF NANOOBJECTS
Ivanova E.A., Krivtsov A.M., Morozov N.F., Semenov B.N. (Russia)
- 02,20 pm CALCULATION OF NANO-CRYSTALLINE COPPER TOUGHNESS USING THE EMBEDDED ATOM METHOD
Luque A., Aldazabal J., Martinez-Esnaola J.M., Gil Sevillano J. (Spain)
- 02,40 pm MECHANICAL PROPERTIES AND FRACTURE MECHANISMS OF Al_2O_3 /POLYPROPYLENE NANOCOMPOSITES
Zhao H., Li R.K.Y. (China)
- 03,00 pm NANOSCALE STRAIN LOCALIZATION: THE INSTABILITY OF STRAINIONS
Chiaia B., Ferro G. (Italy)
- 03,20 pm STRESS-INDUCED PERIODIC FRACTURE PATTERNS IN THIN FILMS
Volinsky A.A., Moody N.R. (USA), Meyer D.C. (Germany)

02,00-03,40 pm

Catania Room

Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS

**MS 1 - 4: Complexity, Scaling and Non-Linearity
in the Mechanics of Advanced Materials**

Chairman: Wnuk M.P. (USA)

- 02,00 pm MULTI-LEVEL LINEAR DIMENSION IN FRACTURE.
A FRACTAL COHESIVE CRACK REPRESENTATION
Wnuk M.P. (USA)
- 02,20 pm A MOTHER-DAUGHTER MECHANISM OF MODE I CRACKS:
SUPERSONIC CRACK MOTION ALONG INTERFACES OF DISSIMILAR
MATERIALS
Buehler M.J., Gao H. (Germany)
- 02,40 pm MODELING OF DYNAMIC FRAGMENTATION IN BRITTLE SOLIDS
Gommerstadt B., Chudnovsky A. (USA)
- 03,00 pm TIME-SCALE EFFECTS ON ACOUSTIC EMISSION DUE TO ELASTIC
WAVES PROPAGATION IN MONITORED CRACKING STRUCTURES
Carpinteri A., Lacidogna G., Pugno N. (Italy)
- 03,20 pm QUASI-BRITTLE FRACTURE OF FOAM-POLYSTYRENE PLATES WITH HOLE
Legan M.A., Kolodezev V.E., Sheremet A.S. (Russia)

Bologna Room

Topic 04 (CER): CERAMICS

MS 1 - 4: Mechanical Reliability of Modern Ceramic Materials

Chairman: Munz D. (Germany)

- 02,00 pm A SILICON NITRIDE REFERENCE MATERIAL FOR CERAMIC DESIGN
Lube T. (Austria), Alcalá J. (Spain), Dusza J. (Slovakia), Klemm H. (Germany)
- 02,40 pm FRACTURE OF ELECTROCERAMIC COMPONENTS
Supancic P., Danzer R. (Austria)
- 03,00 pm CRACK PROPAGATION IN PZT DCB SPECIMENS UNDER CYCLIC
ELECTRIC LOADING
Westram I., Rödel J., Lupascu D.C. (Germany)
- 03,20 pm MODIFIED INDENTATION TEST TO ESTIMATE THE INTERFACIAL
FRACTURE TOUGHNESS OF THICK THERMAL BARRIER COATING
SYSTEMS
Mircea I., Bartsch M. (Germany)

Tuesday, March 22

04,10-05,50 pm

04,10-05,50 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 5: Computational Fracture Mechanics

Chairlady: Pandolfi A. (Italy)

- 04,10 pm MICROMECHANICS-BASED MODELING OF DAMAGE EVOLUTION IN VISCOELASTIC COMPOSITES
Kumar R.S., Talreja R. (USA)
- 04,30 pm APPLICATION OF THE VARIATIONAL MULTISCALE METHOD TO DAMAGE OF COMPOSITES
Hund A., Ramm E. (Germany)
- 04,50 pm 3D COMPUTATIONAL TESTING OF MICROSTRUCTURES OF PARTICLE REINFORCED METAL MATRIX COMPOSITES
Mishnaevsky Jr. L. (Germany)
- 05,10 pm THREE-DIMENSIONAL (3D) MICROSTRUCTURE VISUALIZATION AND FINITE ELEMENT MODELING OF THE MECHANICAL BEHAVIOR OF HETEROGENEOUS MATERIALS
Chawla N., Ganesh V.V. (USA)
- 05,30 pm A WAVELET BASED VORONOI CELL FEM FOR CRACK EVOLUTION IN COMPOSITE MATERIALS
Ghosh S., Li S. (USA)

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 2 - 1: Numerical Approaches to Fatigue

Chairman: Carpinteri An. (Italy)

- 04,10 pm SIMULATION-BASED FATIGUE CRACK MANAGEMENT IN WELDED STRUCTURAL DETAILS
Sumi Y. (Japan)
- 04,50 pm FINITE ELEMENT BASED FATIGUE LIFE PREDICTIONS OF LASER OVERLAP WELDS IN AUTOMOTIVE STRUCTURES
Henrysson H.-F. (Sweden)
- 05,10 pm A FATIGUE ASSESSMENT METHOD BASED ON WELD STRESSES
Poutiainen I., Marquis G. (Finland)
- 05,30 pm LIBRARY OF GEOMETRIC INFLUENCES FOR SIF WEIGHT FUNCTIONS
Brennan F.P., Teh L.S., Love A.J. (UK)

04,10-05,50 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 2 - 1: Meso-Micro-Scale Fracture

Chairman: Yang W. (China)

- 04,10 pm TIME SCALING FOR DYNAMIC SPALL FRACTURE
Pluvinage G., Jeong J. (France), Bouzid S. (Algeria)
- 04,30 pm STUDY OF THE DYNAMIC INTERACTION BETWEEN A FAST RUNNING CRACK AND AN INCLUSION USING THE TIME DOMAIN BEM
Wang Y.S., Lei J. (China), Gross D. (Germany)
- 04,50 pm WAVE SCATTERING AND THERMAL EFFECT OF CRACKED PIEZOELECTRIC MATERIALS
Yu S.-W., Du N.-N., Gu B. (China)
- 05,10 pm NUMERICAL METHOD FOR ANALYZING INTERACTION AND COALESCENCE OF NUMEROUS MICROCRACKS
Feng X.-Q., Ma L., Yu S.-W. (China)
- 05,30 pm A FAST MULTIPOLE DUAL BEM FOR THE ANALYSIS OF 2-D CRACKS
Yao Z.H., Wang P.B. (China)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 5: Physics and Scaling in Fracture

Chairlady: Pasternak E. (Australia)

- 04,10 pm FRACTURE MECHANICAL BEHAVIOR OF CONCRETE AND THE CONDITION OF THE FRACTURE SURFACES ON DIFFERENT SCALES
Mechtcherine V. (Germany)
- 04,30 pm SIZE EFFECT ON COMPRESSIVE STRENGTH OF CONCRETE
Kim J.K., Yi S.T. (South Korea)
- 04,50 pm SIZE EFFECT EXPERIMENTS ON CONCRETE UNDER MULTIAXIAL COMPRESSION
Elkadi A.S. (The Netherlands), van Mier J.G.M. (Switzerland)
- 05,10 pm SCALING OF QUASI-BRITTLE FRACTURE: A BOUNDARY EFFECT MODEL
Duan K., Hu X. (Australia)

04,10-05,50 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

MS 1 - 5: Delamination Fracture in Heterogeneous Materials and Structures

Chairman: Allix O. (France)

- 04,10 pm ON MODE I AND MODE II BRIDGING LAWS AND BRIDGING MECHANISMS IN Z-PINNED COMPOSITE LAMINATES
Liu H.-Y., Yan W., Mai Y.-W. (Australia)
- 04,30 pm DELAMINATION DETECTION OF BONDED COMPOSITE PATCHES FOR REPAIRING DAMAGED AIRCRAFT COMPONENTS BY BRAGG GRATING SENSORS
Marioli-Riga Z., Gdoutos E.E. (Greece)
- 04,50 pm FRACTURE AND FATIGUE PROPERTIES OF Z-PINNED COMPOSITE LAP JOINTS
Chang P., Mouritz A.P. (Australia), Cox B.N. (USA)
- 05,10 pm SOFTENING ALONG THE FRP-CONCRETE INTERFACE UNDER COMBINED SHEAR AND OPENING DISPLACEMENTS
Pan J., Leung C.K.Y. (China)
- 05,30 pm SUPPRESSION OF DELAMINATION IN STRUCTURAL COMPOSITES BY Z-PINNING
Partridge I.K., Cartié D.D.R. (UK)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 5: Damage Mechanics

Chairman: Tralli A. (Italy)

- 04,10 pm NUMERICAL SIMULATION OF CRACK GROWTH IN HIGH PRESSURE COMPONENTS
Bouvard JI., Chaboche JI., Gallerneau F., Feyel F. (France)
- 04,30 pm SIMPLE COMPUTATIONAL METHOD FOR COHESIVE CRACK IN CONCRETE-LIKE MATERIALS
Sancho J.M., Planas J., Cendón D., Reyes E., Gálvez J.C. (Spain)
- 04,50 pm COHESIVE CRACK PROPAGATION IN DAMAGING CONCRETE STRUCTURES DISCRETIZED BY EXTENDED FINITE ELEMENTS
Comi C., Mariani S., Perego U. (Italy)
- 05,10 pm DISCRETE MODELS OF INTERFACE DAMAGE
Haussy B., Ganghoffer J.F. (France)
- 05,30 pm CONSTITUTIVE MODELING FOR THE UNSTABLE STATES OF MATERIALS BY WAVE DYNAMICS AND VARIATIONAL METHODS
Béda P.B., Béda Gy. (Hungary)

04,10-05,50 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

CS 1

Chairman: Roberti R. (Italy)

- 04,10 pm RECENT ADVANCES IN MASTER CURVE TECHNOLOGY
Wallin K., Laukkanen A., Nevasmaa P., Planman T. (Finland)
- 04,30 pm APPLICATION OF THE MASTER CURVE METHODOLOGY TO FRACTURE TOUGHNESS CHARACTERIZATION OF FERRITIC-MARTENSITIC STEEL
Sokolov M.A. (USA), Tanigawa H. (Japan)
- 04,50 pm TWO PARAMETER APPROACHES IN THE PROBABILISTIC FAILURE ASSESSMENT OF FERRITIC STEELS
Hohe J., Hebel J., Siegele D. (Germany)
- 05,10 pm DYNAMIC MASTER CURVE AND DUCTILE-BRITTLE TRANSITION TEMPERATURE OF 9Cr-1Mo Steel
Moitra A., Sreenivasan P.R., Mannan S.L., Singh V. (India)
- 05,30 pm NOVEL CHARPY-FRACTURE TOUGHNESS CORRELATIONS FOR PREDICTING REFERENCE TEMPERATURE AND MASTER CURVE
Sreenivasan P.R., Moitra A., Mannan S.L. (India)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 5: Advances In Dynamic Failure Mechanics

Chairman: Clifton R.J. (USA)

- 04,10 pm THE STRESS FIELD OF A SHEAR CRACK PROPAGATING IN A VISCOELASTIC MEDIUM
Antipov Y.A. (USA), Willis J.R. (UK)
- 04,30 pm DYNAMIC FAILURE OF METALLIC CELLULAR MATERIALS
Lee S., Espinosa H.D. (USA)
- 04,50 pm DYNAMIC RESPONSE AND FAILURE OF CELLULAR NETWORKS
Vural M. (USA)
- 05,10 pm TRANSIENT RESPONSE OF CURVED SANDWICH PANELS SUBJECTED TO EXPLOSIONS
Abrate S. (USA)
- 05,30 pm EFFECTS OF LOADING RATE ON THE LOCAL CLEAVAGE FRACTURE STRESS σ_f IN NOTCHED SPECIMENS
Wang G.Z., Wang Y.L., Chen J.H. (China)

04,10-05,50 pm

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

MS 1 - 5: Structural Integrity of Transportation Systems

Chairman: Marchetti M. (Italy)

- 04,10 pm SMALL-CRACK GROWTH AND FATIGUE-LIFE PREDICTION OF CORRODED OPEN-HOLE SPECIMENS
Newman Jr. J.C., Abbott W. (USA)
- 04,30 pm CHARACTERIZATION OF STRESS CORROSION CRACKING IN AA2024-T3 BY X-RAY RADIOGRAPHY
Liu X., Frankel G.S., Zoofan B., Rokhlin S.I. (USA)
- 04,50 pm ENVIRONMENTAL-ASSISTED FATIGUE CRACKING OF ALUMINUM ALLOYS AT DIFFERENT FREQUENCIES
Stanzl-Tschegg S.E., Holper B., Mayer H. (Austria)
- 05,10 pm EXPERIMENTAL DETERMINATION OF THE CRITICAL CRACK TIP OPENING ANGLE (CTOA) USING THE CTOD δ_5 MEASUREMENT TECHNIQUE
Heerens J., Schödel M., Schwalbe K.-H. (Germany)

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

SS 1 - 1: Failure Analysis in Plants and Transportation

Chairman: Firrao D. (Italy)

- 04,10 pm PRACTICAL SOLUTION FOR AVOIDING FAILURE OF ABSORPTION TOWER AT A NITRIC ACID PLANT – REPLACING WELDING BY MECHANICAL JOINING
El-Batahgy A., Zaghoul B. (Egypt)
- 04,30 pm SERVICE PROBLEMS OF FRESH AIR FAN OF FOSSIL FUEL POWER PLANT – PART I CASE STUDY OF PRIMARY STAGE AIR FAN FAILURE
Sijacki Zeravcic V., Bakic G., Djukic M., Andjelic B. (Serbia and Montenegro)
- 04,50 pm SERVICE PROBLEMS OF FRESH AIR FAN OF FOSSIL FUEL POWER PLANT – PART II CONSTRUCTION DESIGN IMPROVEMENT
Mitrovic R., Ristivojevic M., Stefanovic N., Stamenic Z., Lazovic T. (Serbia and Montenegro)
- 05,10 pm A CONTRIBUTION TO ASSESSMENT OF STEAM GENERATOR TUBES INTEGRITY
Tonkovic Z., Skozrit I., Soric J. (Croatia)
- 05,30 pm FATIGUE OF OFF SHORE CONDENSATE RECYCLE LINE AT NATURAL GAS PRODUCTION FIELD
El-Batahgy A., Zaghoul B. (Egypt)

04,10-05,50 pm

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

SS 1 - 1: Concrete in Compression: Failure and Size Effects

Chairman: Ferro G. (Italy)

- 04,10 pm SIZE EFFECT OF CONCRETE UNDER UNIAXIAL AND FLEXURAL COMPRESSION
Gamino A.L., Borges J.U.A., Bittencourt T.N. (Brazil)
- 04,30 pm DAMAGE EVOLUTION IN COMPRESSED CONCRETE
Stroeven P., Hu J. (The Netherlands)
- 04,50 pm DETERMINING AGGREGATE SIZE & SHAPE EFFECT ON CONCRETE MICROCRACKING UNDER COMPRESSION BY MEANS OF A DEGREE OF REVERSIBILITY METHOD
Tokyay M. (Turkey), Akcaoglu T. (Cyprus)
- 05,10 pm FRACTURE TOUGHNESS AND STRENGTH OF FLY ASH CONCRETE
Bressan J.D., Effting C., Tramontin A. (Brazil)
- 05,30 pm SCALE-INDEPENDENT CONSTITUTIVE LAW FOR CONCRETE IN COMPRESSION
Carpinteri A., Ferro G., Ventura G. (Italy)

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

CS 1

Chairman: Markenscoff X. (USA)

- 04,10 pm REMARKS ON THE APPLICATION OF DESIGN SENSITIVITY ANALYSIS IN FRACTURE MECHANICS
Barthold F.-J. (Germany)
- 04,30 pm GENERALISED STRESS INTENSITY FACTORS APPLIED TO FRACTURE TOUGHNESS DATA FROM V-NOTCHES WITH SMALL ROOT RADII
Berto F. (Italy), Gogotsi G.A. (Ukraine), Lazzarin P. (Italy)
- 04,50 pm ANALYSIS OF CHANGE MODE I STRESS INTENSITY FACTOR IN ELEMENTS WITH ANGULAR NOTCHES
Tabanyukhova M.V., Kurbanov A.B., Pangaev V.V. (Russia)
- 05,10 pm ANALYTICAL EVALUATION OF J-INTEGRAL FOR AN ELLIPTICAL NOTCH
Livieri P., Segala F. (Italy)
- 05,30 pm STRENGTH PREDICTIONS VIA FINITE FRACTURE MECHANICS
Cornetti P. (Italy), Taylor D. (Ireland), Pugno N. (Italy)

04,10-05,50 pm

Napoli Room

**Topic 20 (CREEP): HIGH TEMPERATURE & CREEP
SS 1 - 1: Life Assessment and Maintenance Technology
for High Temperature Equipments**
Chairman: Kitagawa M. (Japan)

- 04,10 pm MODEL FOR TIME-TO-FRACTURE DETERMINATION OF LOW-ALLOYED STEEL UNDER CREEP CONDITIONS
Bakic G., Sijacki Zeravcic V., Djukic M., Milanovic D., Andjelic B. (Serbia and Montenegro)
- 04,30 pm FRACTURE MECHANISMS AND DUCTILITY AT HIGH TEMPERATURES OF A CARBON STEEL
Calvo J., Cabrera J.M., Prado J.M. (Spain)
- 04,50 pm CREEP BEHAVIOR OF A DIRECTIONALLY SOLIDIFIED NICKEL BASED SUPERALLOY
Ibañez A.R. (Argentina), Saxena A. (USA), Kang J. (Canada)
- 05,10 pm RECENT LIFE ASSESSMENT TECHNOLOGY FOR EXISTING STEAM TURBINES
Saito K., Sakuma A., Fukuda M. (Japan)

Genova Room

**Topic 30 (NANO): NANO- OR MICRO-SCALE
SS 2 - 3: Strength and Stability of Nanoobjects**
Chairman: Wiercigroch M. (UK)

- 04,10 pm FATIGUE CRACK PROPAGATION OF INORGANIC NANOPARTICLE FILLED POLYAMIDE 6,6
Zhang Z., Yang J.-L., Zhang H., Friedrich K. (Germany)
- 04,30 pm FATIGUE AND FRACTURE BEHAVIOR OF NANOCRYSTALLINE COPPER AND NICKEL
Bansal S., Saxena A., Hartwig T., Tummala R.R. (USA)
- 04,50 pm APPLICABILITY OF THE LOAD SEPARATION CRITERION AND THE NORMALIZATION METHOD TO HIGH-RATE J-TESTING OF DUCTILE POLYMERS
Baldi F., Riccò T. (Italy)

04,10-05,50 pm

Catania Room

Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS

**MS 1 - 5: Complexity, Scaling and Non-Linearity
in the Mechanics of Advanced Materials**

Chairman: Dyskin A.V. (Australia)

- 04,10 pm THE SCALING OF GEOLOGICAL FAULTS
Scholz C.H. (USA)
- 04,30 pm EVOLUTION OF SELF-SIMILAR SETS OF CRACKS. A POSSIBILITY OF LOCALISATION
Dyskin A.V. (Australia)
- 04,50 pm EXPERIMENTAL INVESTIGATION OF CRACK OPENING ASYMPTOTICS FOR FLUID-DRIVEN FRACTURE
Bunger A.P., Jeffrey R.G. (Australia), Detournay E. (USA)
- 05,10 pm EFFECT OF FLUID COMPRESSIBILITY AND BOREHOLE RADIUS ON THE PROPAGATION OF A FLUID-DRIVEN FRACTURE
Lhomme T. (The Netherlands), Detournay E. (USA), Jeffrey R.G. (Australia)
- 05,30 pm EVOLUTION OF DAMAGE ACCUMULATION IN LOW-CARBON STEEL IN TENSION CONDITION
Tyutin M.R., Botvina L.R., Zharkova N.A., Petersen T.B. (Russia), Hudson J.A. (UK)

Bologna Room

Topic 19 (GLASS): GLASS

SS 1 - 1: Fracture of Glass

Chairman: Rouxel T. (France)

- 04,10 pm FRACTURE OF SILICA AEROGELS: EFFECTS OF SURFACE NATURE ON CRACK PROPAGATION
Despetis F., Etienne P., Etienne-Calas S., Phalippou J. (France)
- 04,50 pm WAVY CRACK PROPAGATION IN INTERNALLY PRESSURIZED GLASS TUBE
Fujimoto K., Shioya T. (Japan)
- 05,10 pm FRACTURE BEHAVIOR OF SILICATE GLASSES NEAR THEIR FATIGUE LIMIT
Guin J.P., Wiederhorn S.M. (USA)
- 05,30 pm SURFACE PROFILE EVALUATION BY FRACTAL DIMENSION AND STATISTIC TOOLS
Hotar V., Novotny F. (Czech Republic)

Wednesday, March 23

10,30 am-12,10 pm

10,30 am-12,10 pm

Auditorium

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 6: Physics and Scaling in Fracture

Chairman: van Mier J.G.M. (Switzerland)

- 10,30 am TOUGHNESS MEASUREMENT IN BRITTLE MATERIALS FROM DIGITAL IMAGE CORRELATION
Roux S., Hild F. (France)
- 11,10 am SURFACES FORMED BY SUBCRITICAL CRACK GROWTH IN SILICATE GLASSES
Wiederhorn S.M., Guin J.P. (USA)
- 11,30 am NANODUCTILE CRACK MODE IN SILICA GLASS: REAL TIME OBSERVATION AND IMPLICATION ON THE POST-MORTEM MORPHOLOGY OF FRACTURE SURFACES
Bonamy D., Prades S., Ponson L., Dalmas D., Rountree C., Bouchaud E., Guillot C. (France)
- 11,50 am EFFECTIVE TOUGHNESS AND FRACTURE FRONT DEPINNING
Vandembroucq D., Roux S. (France)

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 6: Computational Fracture Mechanics

Chairman: Pichler B. (Austria)

- 10,30 am STATICALLY ADMISSIBLE STRESS RECOVERY FOR CRACK PROBLEMS
Xiao Q.Z., Karihaloo B.L. (UK)
- 11,10 am A VARIATIONAL APPROACH TO COHESIVE-DAMAGING CRACK PROPAGATION IN A BAR
Comi C., Mariani S., Negri M., Perego U. (Italy)
- 11,30 am APPLICATION OF A GRADIENT DUCTILE DAMAGE MODEL TO METAL FORMING PROCESSES INCLUDING CRACK PROPAGATION AND MESH ADAPTIVITY
Mediavilla J., Peerlings R.H.J., Geers M.G.D. (The Netherlands)
- 11,50 am EFFECT OF HYPERELASTICITY ON DYNAMICAL CRACK TIP INSTABILITIES
Buehler M.J. (USA, Germany), Gao H. (Germany)

10,30 am-12,10 pm

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 2 - 2: Numerical Approaches to Fatigue

Chairman: Richard H.A. (Germany)

- 10,30 am NUMERICAL APPROACH TO THE MECHANICS OF DISC BLADE DOVETAIL JOINTS IN AERO-ENGINE COMPRESSORS
Hammouda M.M.I., Fayed A.S. (Egypt)
- 10,50 am SIMPLE METHOD FOR ESTIMATION OF FATIGUE LOADING AND USEFUL LIFE FROM FRACTURE MORPHOLOGY
Pokluda J., Šandera P. (Czech Republic)
- 11,10 am NUMERICAL AND EXPERIMENTAL INVESTIGATIONS ON FATIGUE CRACK GROWTH IN A WHEEL OF THE GERMAN HIGH-SPEED TRAIN ICE
Richard H.A., Sander M., Fulland M., Kullmer G. (Germany)
- 11,30 am FATIGUE ANALYSIS OF A COMMERCIAL VEHICLE AXLE BODY USING THE SHORT CRACK MODEL
Savaidis G. (Greece)
- 11,50 am NUMERICAL OPTIMIZATION OF CRUCIFORM SPECIMENS GEOMETRY FOR PERFORMED THROUGH AND SEMI-ELLIPTICAL FATIGUE CRACKS UNDER BIAXIAL CYCLIC LOADS AND CRACK GROWTH SIMULATION
Shaniavski A.A., Radchiev A.M., Potapenko Yu.A. (Russia)

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 2 - 2: Meso-Micro-Scale Fracture

Chairman: Gross D. (Germany)

- 10,30 am DAMAGE OF CONCRETE IN CHEMICALLY AGGRESSIVE ENVIRONMENT: A MICROMECHANICAL MODEL
Weglewski W., Basista M. (Poland)
- 11,10 am ANALYSIS OF CRACK-TIP FIELDS IN FUNCTIONALLY GRADED MATERIALS
Zhong Z., Cheng Z.Q. (China)
- 11,30 am MULTISCALE ANALYSIS FOR INTERFACIAL FRACTURES OF DUCTILE THIN FILM/CERAMIC SUBSTRATE SYSTEMS
Wei Y., Zhao H., Shu S. (China)
- 11,50 am STOCHASTIC ANALYSES OF DYNAMIC FRACTURE IN COMPOSITE CERAMIC MICROSTRUCTURES
Tomar V., Zhou M. (Georgia)

10,30 am-12,10 pm

Parigi Room

Topic 32 (NLMF): NONLINEAR FRACTURE MECHANICS

MS 1 - 2: Nonlinear Fracture Mechanics

Chairman: Tvergaard V. (Denmark)

- 10,30 am INFLUENCE OF CONTINUOUS NUCLEATION OF SECONDARY VOIDS UPON GROWTH AND COALESCENCE OF CAVITIES IN POROUS DUCTILE METALS
Enakousta K., Leblond J., Audoly B. (France)
- 10,50 am MESOSCALE MODELING OF FRAGMENTATION OF CERAMICS UNDER DYNAMIC COMPRESSIVE LOADING
Geubelle P.H., Maiti S., Rangawamy K. (USA)
- 11,10 am NUMERICAL ANALYSIS OF SOME EXPERIMENTAL RESULTS RELATIVE TO SIZE EFFECTS ON THE FRACTURE PARAMETERS
Iordache D.A., Chiroiu V. (Romania), Chiroiu C. (Italy), Iordache V. (Romania)
- 11,30 am BIAxIAL TESTING OF NUCLEAR PRESSURE VESSEL STEEL USING SMALL SCALE CRUCIFORM SPECIMENS
Joyce J.A., Link R.L., Roe C., Gaies J. (USA)
- 11,50 am STRESS-STRAIN STUDY NEAR CRACKS IN RUBBER MODELS BY NONLINEAR PHOTOELASTICITY
Albaut G.N., Kharinova N.V. (Russia)

Roma Room

Topic 05 (COMPO): COMPOSITES

SS 1 - 1: Stress and Failure in Joints

Chairman: Munz D. (Germany)

- 10,30 am STRESSES AND FAILURE IN JOINTS
Munz D. (Germany)
- 10,50 am SINGULAR STRESS FIELDS ALONG A STRESS SINGULAR LINE AND AT A VERTEX IN THREE-DIMENSIONAL JOINTS
Koguchi H., Sakai H., Monchai P. (Japan)
- 11,10 am THE ASYMPTOTIC STRESS FIELD FOR FREE EDGE JOINTS UNDER SMALL-SCALE YIELDING CONDITIONS
Marsavina L. (Romania), Nurse A.D. (UK)
- 11,30 am CALCULATION OF STRESS INTENSITY FACTORS FOR A CRACK ALONG THE $\pm 45^\circ$ INTERFACE OF A FIBER REINFORCED MATERIAL
Banks-Sills L., Freed Y. (Israel)
- 11,50 am FRACTURE INITIATION AT THE INTERFACE CORNER OF BI-MATERIAL SOLIDS
Akisanya A.R. (UK)

10,30 am-12,10 pm

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 6: Damage Mechanics

Chairman: Rinaldi A. (USA)

- 10,30 am EXPERIMENTAL AND COMPUTATIONAL POLYCRYSTAL STUDIES OF FATIGUE DAMAGE AND CRACK INITIATION
Dunne F., Fielding L., Allen R., Manonukul A. (UK)
- 10,50 am OBSERVATION AND PREDICTION OF LOCAL DAMAGE PATTERNS UNDER TENSION AND TORSION HIGH CYCLE FATIGUE
Flaceliere L., Morel F., Dragon A. (France)
- 11,10 am STRUCTURAL MODELING OF THE DAMAGE ACCUMULATION: THE LIFETIME ESTIMATION
Lepov V.V., Arkhangelskaya E.A., Larionov V.P. (Russia)
- 11,30 am A COUPLED ELASTO-PLASTIC MICROPORE DAMAGE MODEL FOR LOW-CYCLE FATIGUE ANALYSES OF DUCTILE METALS AT FINITE STRAINS
Hommel J.-H., Kintzel O., Meschke G. (Germany)
- 11,50 am CONCEPT OF CONTINUOUS DAMAGE DEACTIVATION IN MODELLING OF LOW CYCLE FATIGUE
Ganczarski A., Barwacz L. (Poland)

Atene Room

Topic 27 (MET): METALLIC MATERIALS

CS 2

Chairman: Wallin K. (Finland)

- 10,30 am BENCHMARK ON THE DETERMINATION OF THE CLEAVAGE TRIGGERING SITES IN A RPV STEEL IN THE DBT RANGE
Bouchet C., Arnoldi F., Besson J., Degallaix S. (France), Denner V. (Germany), Desplanques Y., Diard O., Espinasse G., Forget P. (France), Hausild P. (Czech Republic), Maire E. (France), Nedbal I. (Czech Republic), Rabeau V., Tanguy B., Verdu C. (France)
- 10,50 am PREDICTING TEMPERATURE AND LOADING RATE EFFECTS ON CLEAVAGE TOUGHNESS OF A STRUCTURAL STEEL USING A NEW LOCAL APPROACH MODEL
Bordet S.R. (UK)
- 11,10 am FRACTOGRAPHIC STUDY OF CLEAVAGE CRACK ARREST
Hajjaj M., Berdin C., Bompard P., Bugat S. (France)
- 11,30 am MECHANISM OF CLEAVAGE FRACTURE OF HSLA STEEL
Chen J.H., Wang G.Z. (China)
- 11,50 am CHANGE OF CRITICAL EVENT FOR CLEAVAGE FRACTURE OF HSLA STEEL
Chen J.H., Wang G.Z. (China)

10,30 am-12,10 pm

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 6: Advances In Dynamic Failure Mechanics

Chairman: Shukla A. (USA)

- 10,30 am DYNAMIC EFFECTS IN CRACK BRIDGING
Cox B.N., Rosakis A., Sridhar N., Yang Q.D. (USA)
- 11,10 am SHEAR FAILURE AT A CRACK TIP UNDER SHEAR WAVE LOADING
Zhang Z., Clifton R.J. (USA)
- 11,30 am CONDITIONS ON COHESIVE LAWS IN COHESIVE ZONE FRACTURE MODELS
Jin J.-H., Sun C.T. (USA)
- 11,50 am UNIVERSAL ASPECTS OF DYNAMIC FRACTURE IN BRITTLE MATERIALS
Livne A., Fineberg J. (Israel)

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

CS 1

Chairman: Ernst H.A. (Argentina)

- 10,30 am DAMAGE EVOLUTION IN PLANE STRAIN DEFORMATIONS OF IMPACT LOADED SANDWICH PLATES
Batra R.C., Love B.M. (USA)
- 10,50 am STUDY OF ADVANCED COMPOSITE STRUCTURES FOR HIGH TEMPERATURE APPLICATIONS
Marchetti M., Cavallo G., Amantini L., Corradi S., Bellachioma M. (Italy)
- 11,10 am DAMAGE TOLERANCE ISSUES PECULIAR TO SUPERSONIC CIVIL TRANSPORT AIRCRAFT
Odemer G., Henaff G., Journet B., Remy L., Haddar N., Köster A. (France)
- 11,30 am FATIGUE CRACK NUCLEATION AND PROPAGATION IN BONDED JOINTS
Pirondi A., Nicoletto G. (Italy)
- 11,50 am SURVEILLANCE SYSTEM AIRBORNE COMPOSITE RADOME DESIGN
Pulvirenti G., Tromboni P.D., Marchetti M., Delogu A., Maccapani A., Aricò R. (Italy)

10,30 am-12,10 pm

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

SS 1 - 2: Failure Analysis in Plants and Transportation

Chairman: Deegan D.C.(USA)

- 10,30 am FINITE ELEMENT MODELING OF PRESSURE VESSEL WITH TWO INTERNAL SURFACE CRACKS
Argoub E., Sedmak A., Burzic Z. (Serbia and Montenegro), Adziev G. (Macedonia)
- 10,50 am APPLICATION OF FRACTAL ANALYSIS IN TEXTILE PRODUCTION PROCESSES
Chrpova E. (Czech Republic)
- 11,10 am PROGRESSIVE FAILURE ANALYSIS APPROACH FOR ESTIMATING MATERIAL FRACTURE TOUGHNESS (REDUCING TIME & COST OF TESTING)
Farahmand B., Hajjar F. (USA)
- 11,30 am FAILURE ANALYSIS OF THE SUSPENSION SPRING OF A LIGHT DUTY TRUCK
Eryürek I.B., Ereke M., Göksenli A. (Turkey)
- 11,50 am OPTIMAL SHAPE DESIGN WITH FATIGUE LIFE AS DESIGN CONSTRAINT USING A 3D BIOLOGICAL METHOD
Das R., Jones R., Peng D. (Australia)

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

SS 2 - 1: Bond Failure in Concrete and Cement-based Composites

Chairman: Mihashi H. (Japan)

- 10,30 am EXPERIMENTAL INVESTIGATIONS AND MODELING OF BOND BETWEEN ROUND STRAND ROPES AND CONCRETE
Avak R., Wille F. (Germany)
- 10,50 am INFLUENCE OF LOCAL BOND CHARACTERISTICS IN FRP-CONCRETE BOND BEHAVIOR
Kanakubo T., Wu Z.-S., Ueda T. (Japan)
- 11,10 am MODE II FRACTURE ENERGY OF FRP-CONCRETE INTERFACE: ITS EVALUATIONS AND ROLES IN INTERFACE MODELING AND ANCHORAGE DESIGN
Ueda T., Dai J. (Japan)
- 11,30 am BOND SPLITTING STRENGTH OF RC MEMBERS BASED ON LOCAL BOND STRESS AND SLIP BEHAVIOR
Yasojima A., Kanakubo T. (Japan)
- 11,50 am BEARING ANGLE MODEL FOR BOND OF REINFORCING BARS TO CONCRETE
Choi O.C., Yang S.Y. (South Korea)

10,30 am-12,10 pm

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

CS 2

Chairman: Svendsen B. (Germany)

- 10,30 am DUCTILE FRACTURE: MATERIAL REMODELLING IN THE PROCESS ZONE
Di Carlo A. (Italy)
- 10,50 am HAMILTONIAN FORMALISMS IN ELASTICITY – POTENTIAL USE FOR FRACTURE MECHANICS
Li J., Recho N. (France)
- 11,10 am ON PRE-FRACTURE ZONE MODELLING FOR AN INTERFACE CRACK IN ANISOTROPIC BIMATERIAL
Loboda V.V., Sheveleva A.E. (Ukraine)
- 11,30 am VIRTUAL TESTING FOR ESTIMATING MATERIAL FRACTURE PROPERTIES (REDUCING TIME & COST OF TESTING)
Farahmand B. (Usa)
- 11,50 am KOLOSOV-MUSKHELISHVILI FORMULAS REVISITED
Kotchergenko I.D. (Brazil)

Napoli Room

Topic 20 (CREEP): HIGH TEMPERATURE & CREEP

CS 1

Chairman: Labanti M. (Italy)

- 10,30 am THE TOPOLOGY OF FRACTURE SURFACES IN INTERGRANULAR CREEP FRACTURE
Kaim Y., Onck P.R., van der Giessen E. (The Netherlands)
- 10,50 am MICRO STRUCTURAL ORIGIN OF THE APPARENT THERMAL TRANSIENT CREEP OF CONCRETE AT HIGH TEMPERATURE
Mounajed G., Boussa H., Grondin F., Menou A. (France)
- 11,10 am HIGH TEMPERATURE DYNAMIC FRACTURE TOUGHNESS INITIATION IN GAMMA MET PX
Shazly M., Prakash V. (USA)
- 11,30 am CREEP DAMAGE MECHANISMS IN PARTICLE REINFORCED MAGNESIUM COMPOSITES
Sklenicka V., Svoboda M., Pahutova M., Kucharova K. (Czech Republic)

10,30 am-12,10 pm

Genova Room

Topic 30 (NANO): NANO- OR MICRO-SCALE

CS 1

Chairman: Buehler M.J. (Germany)

- 10,30 am FRACTURE OF PIEZOELECTRIC MEMS STRUCTURES
Bahr D.F., Olson A.L., Kennedy M.S., Morasch K.R., Richards C.D., Richards R.F. (USA)
- 10,50 am STRENGTH AND TIME-DEPENDENT BEHAVIOR OF SINGLE-WALLED CARBON NANOTUBE ROPES AND THEIR COMPOSITES
Ren Y., Zhang H., Fu Y.Q. (Singapore), Li F., Cheng H.M., Xiao T. (China), Liao K. (Singapore)
- 11,10 am THE USE OF CONTROLLED SHOT PEENING TO IMPROVE THE FRETTING FATIGUE BEHAVIOUR OF FLAT ON FLAT ALUMINUM CONTACT
Rodopoulos C.A., Brown M.W. (UK), Pantelakis Sp. (Greece), Gardiner S., Edwards R. (UK)
- 11,30 am COMPARABILITY OF RESULTS VIA THE MINIATURISED SMALL PUNCH CREEP TEST METHOD AND TRADITIONAL UNIAXIAL CREEP TESTING
Bicego V. (Italy), Di Persio F., Hurst R.C. (The Netherlands), Stratford G. (UK)
- 11,50 am DELAMINATION AT FREE EDGE OF INTERFACE BETWEEN PIEZOELECTRIC THIN FILMS
Shang F., Kitamura T., Hirakata H. (Japan)

Catania Room

Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS

MS 1 - 6: Complexity, Scaling and Non-Linearity in the Mechanics of Advanced Materials

Chairman: Puzzi S. (Italy)

- 10,30 am PROCEDURE OF STATISTICAL SIZE EFFECT PREDICTION FOR CRACK INITIATION PROBLEMS
Vořechovský M. (Czech Republic), Bažant Z.P. (USA), Novák D. (Czech Republic)
- 10,50 am THE MECHANICAL BEHAVIOR AND PERCOLATION OF PORE SPACE IN THE INTERFACIAL TRANSITION ZONE OF CONCRETE
Nemati K.M. (USA)
- 11,10 am SIZE EFFECTS IN GRAINED MATERIALS: EXTREME VALUE THEORY APPROACH
Carpinteri A., Cornetti P., Puzzi S. (Italy)
- 11,30 am FRACTURE TOUGHNESS OF SNOW: SIZE EFFECTS IN A QUASI-BRITTLE MATERIAL
Sigrist Ch., Schweizer J., Schindler H.J., Dual J. (Switzerland)
- 11,50 am A CRITERION STUDY FOR NON-SINGULAR STRESS CONCENTRATION WITH SIZE EFFECT
Li J., Zhang X.B. (France)

10,30 am-12,10 pm

Bologna Room

Topic 19 (GLASS): GLASS

SS 1 - 2: Fracture of Glass

Chairman: Sglavo V.M. (Italy)

- 10,30 am FRACTURE, PERMANENT DEFORMATION AND STRUCTURE CHANGE
IN OXIDE GLASSES
Matsuoka J. (Japan)
- 11,10 am EFFECT OF DENSIFICATION ON CRACK INITIATION IN VICKERS
INDENTATION TEST
Kato Y., Yamazaki H., Yamamoto S., Yoshida S., Matsuoka J. (Japan)
- 11,30 am INFLUENCE OF THE MINERAL WOOL PRODUCTION TECHNOLOGICAL
PARAMETERS AND HUMIDITY ATTACK ON ITS FIBRE FRAGILITY
Kerienė J. (Lithuania)
- 11,50 am ON THE BRITTLINESS OF BULK METALLIC GLASSES
*Keryvin V., Bernard C., Sangleboeuf J.-C. (France), Yokoyama Y. (Japan),
Rouxel T. (France)*

Wednesday, March 23

02,00-03,40 pm

02,00-03,40 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 7: Computational Fracture Mechanics

Chairman: Moes N. (France)

- 02,00 pm FINITE ELEMENT METHODS FOR THE ANALYSIS OF STRONG DISCONTINUITIES IN PLATES AT FAILURE
Armero F., Ehrlich D. (USA)
- 02,40 pm ON A FINITE ELEMENT WITH EMBEDDED DISCONTINUITIES FOR NUMERICAL MODELING OF FRACTURE
Oliver J., Huespe A.E., Blanco S. (Spain)
- 03,00 pm VECTOR LEVEL SETS FOR CRACKS IN PARTITION OF UNITY METHODS
Ventura G. (Italy), Budyn E., Xu J.X., Belytschko T. (USA)
- 03,20 pm THE COHESIVE SEGMENTS METHOD FOR THE SIMULATION OF FRACTURE
Remmers J.C. (The Netherlands), de Borst R. (The Netherlands, France), Needleman A. (USA)

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 2 - 3: Numerical Approaches to Fatigue

Chairman: Pokluda J. (Czech Republic)

- 02,00 pm OBJECT-ORIENTED DEVELOPMENT ENVIRONMENT TO COMPUTE MULTIAXIAL FATIGUE CRITERIA
Charles J.-L., Palin-Luc T., Delahay T. (France)
- 02,40 pm NOTCH AND DEFECT SENSITIVITY UNDER ANY KIND OF FATIGUE LOADING: A UNIFYING APPROACH
Atzori B., Susmel L. (Italy)
- 03,00 pm FATIGUE CRACK GROWTH IN ELASTIC-PLASTIC MATERIALS UNDER COMBINED BENDING WITH TORSION
Macha E., Rozumek D., Pawliczek R. (Poland)
- 03,20 pm COMPARISON BETWEEN NOTCH AND DEFECT IN MULTIAXIAL FATIGUE
Morel F., Nadot Y., Morel A. (France)

02,00-03,40 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 2 - 3: Meso-Micro-Scale Fracture

Chairman: Yu S.-W. (China)

- 02,00 pm MULTISCALE SIMULATION FOR HIGH ENERGY CLUSTER IMPACTS AND INDUCED DAMAGE
Yang W., Guo Z. (China)
- 02,40 pm TRANSFERABILITY AND CRITICAL DISTANCE APPROACHES
Pluvinage G. (France)
- 03,00 pm SIMULATION OF FATIGUE CRACK PROPAGATION IN DUCTILE METALS BY BLUNTING AND RE-SHARPENING
Levkovitch V., Sievert R., Svendsen B. (Germany)
- 03,20 pm MATHEMATICAL MODELING OF TEMPERATURE AND RATE DEPENDENCES OF STRAIN HARDENING IN FCC METALS
Kolupaeva S.N., Puspesheva S.I., Semenov M.E. (Russia)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 7: Physics and Scaling in Fracture

Chairman: Chiaia B. (Italy)

- 02,00 pm THE FRACTURE PROBLEM IN THE FRAMEWORK OF GENERALIZED STATISTICAL MECHANICS
Cravero M., Iabichino G., Kaniadakis G., Miraldi E., Scarfone A.M. (Italy)
- 02,20 pm ROUGHNESS SCALING IN GBE MATERIALS
Duxbury P.M., McGarrity E.S., Holm E.A. (USA)
- 02,40 pm STUDIES OF QUASI-STATIC FRACTURE USING ITERATED CONFORMAL MAPS
Hentschel H.G.E. (USA), Procaccia I. (Israel)
- 03,00 pm AVALANCHE SCALING AND CRACK ROUGHNESS IN THE RANDOM FUSE MODEL
Nukala P.K.V.V., Simunovic S. (USA), Zapperi S. (Italy)
- 03,20 pm DYNAMICS AND STRUCTURE OF INTERFACIAL CRACK FRONT
Måløy K.J., Toussaint R. (Norway), Schmittbuhl J. (France)

02,00-03,40 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

SS 1 - 2: Stress and Failure in Joints

Chairlady: Banks-Sills L. (Israel)

- 02,00 pm COMPARISON OF A FRACTURE MECHANICS BASED MODEL AND A COHESIVE ZONE MODEL OF FRACTURE IN JOINTS
Jensen H.M. (Denmark)
- 02,20 pm SHAPE EFFECT OF ARBITRARY INTERFACE ON THE BONDING STRENGTH OF T-TYPE JOINT STRUCTURE COMPOSED OF COPPER AND TUNGSTEN
Fukuzawa Y., Morii H., Nagasawa S., Takaoka S. (Japan)
- 02,40 pm INITIATION OF INTERFACE CRACK AT FREE EDGE BETWEEN THIN FILMS IN AN ADVANCED LSI
Kitamura T., Hirakata H. (Japan)
- 03,00 pm HIGH CYCLE FATIGUE BEHAVIOUR OF WELDED JOINTS BASED ON NOTCH STRESS INTENSITY FACTORS
Atzori B., Lazzarin P., Tovo R. (Italy)
- 03,20 pm STACKING LAMINATE EFFECTS ON ADHESIVE LAP JOINTS STRENGTH
Reis P.N.P., Ferreira J.M., Silva H., Costa J.D. (Portugal), Richardson M. (UK)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 7: Damage Mechanics

Chairman: Rinaldi A. (USA)

- 02,00 pm CREEP-DAMAGE INTERACTION IN CONCRETE STRUCTURES
Pijaudier-Cabot G., Omar M., Loukili A., Le Pape Y. (France)
- 02,20 pm A LIFETIME PREDICTION MODEL FOR SINGLE CRYSTAL SUPERALLOYS SUBJECTED TO THERMOMECHANICAL CREEP-FATIGUE-OXIDATION DAMAGE
Alam A.M. (Switzerland), Remy L. (France)
- 02,40 pm UNIFIED FRAMEWORK FOR DAMAGE AND FATIGUE OF METALS, CONCRETE AND ELASTOMERS
Desmorat R. (France)
- 03,00 pm INTERFACE FRACTURE TOUGHNESS OF TBCs AT HIGH TEMPERATURE
Wu D., Zhou Y.C. (China)
- 03,20 pm THERMOSHOCK FRACTURING IN ALUMINA REFRACTORIES: CRACK GROWTH AND PATTERN FORMATION IN A HETEROGENEOUS MEDIUM
Zinngrebe E., Damhof E., Andersen F. (The Netherlands)

02,00-03,40 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

CS 3

Chairman: Iacoviello F. (Italy)

- 02,00 pm EXPERIMENTAL STUDY ON THE RELATIONSHIP BETWEEN IMPACT FRACTURE PROPERTIES AND TITANIUM ADDITION FOR HSLA STEELS
Fang J. (China)
- 02,20 pm INFLUENCE OF RESIDUAL STRESSES ON BRITTLE FRACTURE OF FERRITIC STEELS
Mirzaee Sisan A., Truman C.E., Smith D.J. (UK)
- 02,40 pm CLEAVAGE INITIATION MECHANISM IN NOTCHED SPECIMENS OF STEEL WITH CARBIDES AND INCLUSIONS
Wang G.Z., Chen J.H. (China)
- 03,00 pm AN INVESTIGATION OF THE PROPAGATION OF BRITTLE FRACTURE IN POLYCRYSTALLINE ZINC
Hughes G.M., Smith G.F., Flewitt P.E.S., Crocker A.G. (UK)
- 03,20 pm THERMAL-MECHANICAL FATIGUE BEHAVIOUR OF MICROCAST-X INCONEL 718
Chaturvedi M.C., Zagula J., Richards N.L. (Canada)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 7: Advances In Dynamic Failure Mechanics

Chairman: Willis J.R. (UK)

- 02,00 pm MODELING DELAMINATION FRACTURE WITH FRICTIONAL CONTACT IN ORTHOTROPIC LAMINATES
Massabò R., Brandinelli L. (Italy)
- 02,20 pm SPECTRAL SCHEME FOR ANALYSIS OF DYNAMIC DELAMINATION OF A THIN FILM
Geubelle P.H. (USA), Hendrickx J.M. (Belgium), Sottos N.R. (USA)
- 02,40 pm EXPERIMENTAL INVESTIGATION AND MODELING ON DYNAMIC FAILURE MODE TRANSITIONS IN LAYERED COMPOSITE MATERIALS
Xu L.R., Rosakis A.J. (USA)
- 03,00 pm EXPERIMENTAL STUDIES OF MIXED MODE SPONTANEOUS FRACTURES EXPANDING ALONG WEAK PLANES
Xia K., Chalivendra V.B., Rosakis A.J. (USA)
- 03,20 pm INTERACTION OF DYNAMIC CRACKS WITH INCLINED INTERFACES
Chalivendra V.B., Hong S., Rosakis A.J., Arias I., Knap J., Ortiz M. (USA)

02,00-03,40 pm

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

CS 2

Chairman: Pirondi A. (Italy)

- 02,00 pm OVERVIEW ON FAILURE INVESTIGATION: FATIGUE AND STRESS-CORROSION CRACKING ON IAF FLEET
Bagnoli F., Allegrucci L. (Italy)
- 02,20 pm AN ELLIPTIC CRACK IN A PIEZOELECTRIC MATERIAL
Saha T.K. (India)
- 02,40 pm ANALYSIS OF THE RESIDUAL STRENGTH AND LINK-UP STRESS OF ALUMINIUM PLATES WITH MULTI-SITE DAMAGE
Ciliato G.D., Carneiro S.H.S. (Brazil)
- 03,00 pm INFLUENCE OF SCANDIUM ON THE KINETICS OF FATIGUE CRACK GROWTH IN 7010 AL-ALLOY
Desmukh M.N., Pandey R.K., Mukhopadhyay A.K. (India)

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

SS 1 - 3: Failure Analysis in Plants and Transportation

Chairman: Sedmak A. (Serbia and Montenegro)

- 02,00 pm FAILURE ANALYSIS OF A WIRE ROPE BELONGING TO THE TRACTION SYSTEM OF A CABLE CAR
Pinto A.L., da Costa Viana C.S., Mendonça Brandão L.P., Savi M., Calas Lopes Pacheco P.M. (Brazil)
- 02,20 pm COMPARATIVE THEORETICAL-EXPERIMENTAL EVALUATION OF CONROD LITTLE-EYE STRESS ANALYSIS
Cascella M.T., Rossi M., Cassani S., Costa A. (Italy)
- 02,40 pm IN-SITU X-RAY MICROXRAY DIFFRACTION STUDY OF SINGLE SLIP CONDITIONED COPPER POLYCRYSTALS DURING UNIAXIAL DEFORMATIONS
Joo H.D., Bark C.W., Kim J.Y., Koo Y.M. (South Korea), Tamura N. (USA)
- 03,00 pm QUANTITATIVE MEASUREMENT OF STRETCHED ZONE WIDTH BASED ON DIFFERENCES IN FRACTURE SURFACE ROUGHNESS
Takanashi M., Yamagiwa K., Izumi S., Sakai S. (Japan)
- 03,20 pm ANALYSIS AND RESEARCH ON CAUSES OF COUPLING CRACK FOR 177.8x11.51mmV150 LCSG
Shuanlu L., Long Y., Pengbing Y., Changyi Q., Xinwei Z., Guozheng Z., Xihu W. (China)

02,00-03,40 pm

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

SS 2 - 2: Bond Failure in Concrete and Cement-based Composites

Chairman: Kanakubo T. (Japan)

- 02,00 pm BOND BEHAVIOR OF A DEFORMED BAR IN HIGH-PERFORMANCE FIBER-REINFORCED CEMENT COMPOSITES (HPFRCC)
Mihashi H., Otsuka K., Akita H., Kikuchi T., Suzuki S. (Japan)
- 02,20 pm FRP-CONCRETE DELAMINATION RESULTS ADOPTING DIFFERENT EXPERIMENTAL PURE SHEAR SETUPS
Mazzotti C., Savoia M., Ferracuti B. (Italy)
- 02,40 pm SPLITTING DESIGN FOR ANCHORAGES AND SPLICES WITH POST-INSTALLED REINFORCEMENT
Kunz J. (Liechtenstein)
- 03,00 pm DESIGN OF FASTENINGS BASED ON FRACTURE MECHANICS
Eligehausen R., Ozbolt J. (Germany)
- 03,20 pm EXPERIMENTAL VALIDATION IN THE EFFECT OF SECONDARY FLEXURE IN UNIAXIAL TENSION OF CONCRETE
Akita H., Koide H., Mihashi H. (Japan)

Milano Room

Topic 02 (ANALY): ANALYTICAL MODELS

CS 3

Chairman: Cornetti P. (Italy)

- 02,00 pm A GENERAL WEIGHT FUNCTION FOR A SUBSURFACE CRACK IN A TWO DIMENSIONAL HALF-SPACE
Beghini M., Bertini L., Fontanari V. (Italy)
- 02,20 pm APPLICATION OF A STRIP-YIELD CRACK CLOSURE MODEL TO CRACK GROWTH PREDICTIONS FOR STRUCTURAL STEEL
Skorupa M., Machniewicz T., Skorupa A. (Poland), Beretta S., Carboni M. (Italy)
- 02,40 pm A GENERAL FORMULATION OF THE POTENTIAL ENERGY RELEASE RATE FOR A THREE-DIMENSIONAL HYPERELASTIC BODY CONTAINING A PLANE CRACK
Chiarelli M., Troiani E. (Italy)
- 03,00 pm FAILURE DEVELOPMENT IN THERMAL BARRIER COATINGS
Rubinstein A.A., Tang Y. (USA)
- 03,20 pm RING SHAPED CRACK PROBLEM FOR A HOLLOW CYLINDER EMBEDDED IN A DISSIMILAR MEDIUM
Suat Kadioğlu F., Maden Ö. (Turkey)

02,00-03,40 pm

Napoli Room

Topic 08 (CORR): CORROSION

SS 1 - 1: Corrosion and Fatigue of Aging Aircraft Systems

Chairman: Petit J. (France)

- 02,00 pm ABSORPTION OF HYDROGEN BY HIGH-STRENGTH STEEL AT CHEMICAL AND ELECTROCHEMICAL NICKEL PLATING AND VARIATIONS OF ITS FATIGUE STRENGTH
Slezhkin V.A., Beloglazov S.M. (Russia)
- 02,20 pm EFFECTIVE PROPERTIES OF SOLIDS WITH STRESS CORROSION CRACKS
Touzet M., Aubert I., Le Poulain F., Puiggali M. (France)
- 02,40 pm CORROSION AND FITNESS FOR SERVICE
Gabetta G. (Italy)
- 03,00 pm METALLURGICAL ASPECTS OF ROCK BOLT ENVIRONMENT FRACTURE
Gamboia E., Villalba E., Atrens A. (Australia)
- 03,20 pm PREVENTION POSSIBILITIES OF STRESS CORROSION CRACKING OF MONEL 400 IN HYDROFLURIC ACID
Kumar R., Chatterjee U.K. (India)

Genova Room

Topic 43 (THIN): THIN FILMS

SS 1 - 1: Mechanical Properties of Thin Films

Chairman: Gao H. (Germany)

- 02,00 pm SIZE DEPENDENCE OF MECHANICAL PROPERTIES OF GOLD AT THE MICRON SCALE
Greer J.R., Oliver W.C., Nix W.D. (USA)
- 02,40 pm STRESS EVOLUTION DURING VOLMER-WEBER GROWTH OF THIN FILMS
Thompson C.V. (USA)
- 03,00 pm PLASTICITY AND FRACTURE OF METALLIC THIN FILMS
Dehm G. (Germany)
- 03,20 pm IN SITU TEM MONITORING OF DISLOCATION MECHANISMS IN THIN METALLIC FILMS
Legros M. (France), Dehm G., Arzt E. (Germany)

02,00-03,40 pm

Catania Room

Topic 40 (SCALE): SCALING LAWS & SIZE EFFECTS

SS 1 - 1: From Micro to Global Scale

Chairlady: Botvina L.R. (Russia)

- 02,00 pm SIZE EFFECT AND MULTISCALE FRACTURE
Borodich F.M. (UK)
- 02,20 pm ON THE STRUCTURE OF PLASTIC AND DAMAGE ZONES IN DIFFERENT MATERIALS AT VARIOUS SCALES
Botvina L.R. (Russia), Korsunsky A.M. (UK)
- 02,40 pm MULTI-SCALE FRACTURE VIA TECTONOFRACTOGRAPHIC AND ELECTROMAGNETIC RADIATION TECHNIQUES
Bahat D. (Israel)
- 03,00 pm RESPONSE OF FRACTURE NUCLEATION SITE TO WEAK MECHANICAL PULSES
Kuksenko V.S., Damaskinskaya E.E. (Russia)
- 03,20 pm DEFECT POPULATION STATISTICS NEAR AND FAR FROM A CRITICAL EVENT
Korsunsky A.M. (UK), Botvina L.R. (Russia)

Bologna Room

Topic 19 (GLASS): GLASS

SS 1 - 3: Fracture of Glass

Chairman: Matsuoka J. (Japan)

- 02,00 pm CONSTRAINT-DEPENDENT FRACTURE TOUGHNESS OF GLASS AND PMMA
Naumenko V.P., Skrypnyk Yu.D. (Ukraine), Nedelchev N.I. (Bulgaria)
- 02,20 pm LONG-TERM RELIABILITY OF CRT MONITORS
Omoto Y., Tani S., Ohsugi S. (Japan)
- 02,40 pm THE DRIVING FORCE FOR INDENTATION CRACKING IN GLASSES
Rouxel T., Shang H., Sangleboeuf J.-C. (France)
- 03,00 pm ANALYSIS OF FRACTURE BEHAVIOUR IN ESP GLASSES
Sglavo V.M., Lorenzini C. (Italy)
- 03,20 pm STRENGTH AND FRACTURE BEHAVIOUR OF ANNEALED AND TEMPERED FLOAT GLASS
Veer F.A., Bos F.P., Zuidema J., Romein T. (The Netherlands)

Wednesday, March 23

04,10-05,50 pm

04,10-05,50 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 8: Computational Fracture Mechanics

Chairman: Yagawa G. (Japan)

- 04,10 pm FRACTAL FINITE ELEMENT METHOD FOR THERMAL STRESS INTENSITY FACTOR CALCULATION
Leung A.Y.T. (China)
- 04,30 pm THE BOUNDARY FINITE ELEMENT METHOD FOR THE SEMI-ANALYTICAL COMPUTATION OF 3D STRESS SINGULARITIES IN FRACTURE MECHANICS
Mittelstedt C., Becker W. (Germany)
- 04,50 pm EVALUATION OF STRESS INTENSITY FACTORS WITH G-THETA METHOD AND LEVEL SETS IN CODE_ASTER
Geniaut S., Massin P., Moes N. (France)
- 05,10 pm A HYBRID WEIGHT FUNCTION APPROACH FOR THE COMPUTATION OF STRESS INTENSITY FACTOR IN ELLIPTICAL AND SEMI-ELLIPTICAL CRACKS
Hachi B.K., Rechak S., Belkacemi Y., Haboussi M. (Algeria)
- 05,30 pm RESIDUAL SHEAR STRESSES AND K_{II} COMPUTATION
Cheng W., Finnie I. (USA)

Berlino Room

Topic 16 (FATIG): FATIGUE

MS 2 - 4: Numerical Approaches to Fatigue

Chairman: Macha E. (Poland)

- 04,10 pm USE OF THE COMPUTERS IN THE DEVELOPMENT OF OFFSHORE RELATED LOAD HISTORIES
Pook L.P. (UK)
- 04,30 pm ADVANCED SIMULATION OF 3D FATIGUE CRACK GROWTH BY A PREDICTOR-CORRECTOR PROCEDURE CONSIDERING 3D SINGULARITIES
Kolk K., Kuhn G. (Germany)
- 04,50 pm A NUMERICAL APPROACH TO THE FATIGUE CRACK GROWTH THRESHOLD
Michel S.A., Kieselbach R., Figliolino M. (Switzerland)
- 05,10 pm SPLASH TEST NUMERICAL MODELISATIONS
Amiable S., Chapuliot S., Fissolo A., Constantinescu A. (France)
- 05,30 pm NUMERICAL APPROACH IN THERMOMECHANICAL FATIGUE
Charkaluk E., Constantinescu A., Thomas J.J. (France)

04,10-05,50 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

MS 2 - 4: Meso-Micro-Scale Fracture

Chairman: Tang X.S. (China)

- 04,10 pm NANOINDENTATION OF HIGHLY ORIENTED PYROLYTIC GRAPHITE
Xu W.-H., Wang Y., Zhang T.-Y. (China)
- 04,30 pm ANISOTROPIC DAMAGE OF HIGHER ORDER CONTINUUM MODELS FOR CELLULAR MATERIALS
Ebinger T., Steeb H., Diebels S. (Germany)
- 04,50 pm NUMERICAL ANALYSIS OF INTERGRANULAR DAMAGE AND FRACTURE BEHAVIOR OF BRITTLE CONTINUA WITH STOCHASTIC GRAIN BOUNDARIES
Li J.R., Zheng Z.J., Yu J.L. (China)
- 05,10 pm ON TWO-SCALE MODEL OF FRACTURE MESOMECHANICS OF COMPOSITES WITH CRACKS UNDER COMPRESSION
Guz A.N. (Ukraine)
- 05,30 pm COMPRESSIVE FRACTURE OF LAYERED HYPERELASTIC MATERIALS WITH INTER- AND INTRALAMINAR DEFECTS
Guz I.A., Kashtalyan M. (UK), Herrmann K.P. (Germany)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 8: Physics and Scaling in Fracture

Chairman: Pugno N. (Italy)

- 04,10 pm FAILURE TIME, CRITICAL BEHAVIOUR AND ACTIVATION PROCESSES IN CRACK FORMATION
Ciliberto S., Deschanel S., Guarino A., Santucci S., Scorretti R., Vanel L. (France)
- 04,30 pm CORROSION EFFECTS ON FAILURE AT VARIOUS SCALES IN SUSPENSION CABLES
Elachachi S.M. (Algeria), Yotte S., Breyse D. (France)
- 04,50 pm STATISTICAL MECHANICS OF INTERACTING FIBER BUNDLES
Toussaint R. (Norway)
- 05,10 pm CREEP RUPTURE OF FIBER BUNDLES
Kun F. (Hungary), Hidalgo R.C. (Canada), Herrmann H.J. (Germany)
- 05,30 pm PHYSICS OF SUB-CRITICAL CRACK GROWTH IN A FIBROUS MATERIAL: EXPERIMENTS AND MODEL
Santucci S., Cortet P.-P., Vanel L., Ciliberto S. (France)

04,10-05,50 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

SS 2 - 1: Failure of Ceramic-, Metal- and Polymer-based Composites

Chairman: Ochiai S. (Japan)

- 04,10 pm TEMPERATURE- AND DISPLACEMENT SPEED-DEPENDENCE OF NOTCHED STRENGTH AT 1873-2023K OF ALUMINA/YAG COMPOSITE
Ochiai S., Sakai Y., Sato K., Ueda T., Morishita K., Okuda H., Tanaka M., Hojo M., Waku Y., Nakagawa N., Sakata S., Mitani A., Takahashi T. (Japan)
- 04,30 pm FRACTURE BEHAVIOR OF TYRANNO-ZMI FIBER EXPOSED IN AIR AT 1173~1673K
Morishita K., Hojo M., Okuda H., Ochiai S., Sato M. (Japan)
- 04,50 pm MULTIPLE CRACKING OF GALVANNEALED COATING LAYER ON STEEL SUBSTRATES
Iwamoto S., Ochiai S., Okuda H., Nakamura T. (Japan)
- 05,10 pm EVALUATION OF THE INTERFACIAL PROPERTIES IN AN ARAMID FIBER/EPOXY MODEL COMPOSITE USING MICRO-RAMAN SPECTROSCOPY
Tanaka K., Minoshima K., Kawano K., Komai K. (Japan)
- 05,30 pm RESIDUAL STRESSES IN A TWO PHASE CONCENTRIC CYLINDER CONFIGURATION
Colpo F., Humbert L., Botsis J. (Switzerland)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 8: Damage Mechanics

Chairman: Jirasek M. (Czech Republic)

- 04,10 pm DAMAGE GROWTH AFFECTED BY FRICTIONAL SLIP AND DILATANCY AT CRACK INTERFACES
Seweryn A., Kulchytsky-Zhyhailo R.D., Mróz Z. (Poland)
- 04,30 pm FRACTURE CRITERION FOR BRITTLE ROCK-LIKE MATERIALS
Litewka A. (Portugal), Szojda L. (Poland)
- 04,50 pm SIMULATION OF GEOMATERIALS USING CONTINUUM DAMAGE MODELS ON AN EULERIAN GRID
Lomov I., Antoun T.H. (USA)
- 05,10 pm DAMAGE RHEOLOGY MODEL AND DECAY LAW OF AFTERSHOCK ACTIVITY
Lyakhovskiy V. (Israel), Ben-Zion Y. (USA)
- 05,30 pm A NEW F.E. TANGENT DAMAGE MODEL MODEV FOR CONCRETE STRUCTURES
Ung Quoc H., Mounajed G. (France)

04,10-05,50 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

CS 4

Chairman: Doglione R. (Italy)

- 04,10 pm FRACTURE TOUGHNESS K_{IVM} MEASUREMENT OF NONBRITTLE METALLIC MATERIALS BY "CHEVRON NOTCH" SPECIMENS
Dal Re V., Zucchelli A. (Italy)
- 04,30 pm CRACK CLOSURE: MECHANISMS, EXPLANATION AND PREDICTION
Pippan R., Motz C. (Austria)
- 04,50 pm PREDICTION OF CRACK INITIATION IN SINGLE CRYSTAL Ni-BASE SUPERALLOYS AT HIGH TEMPERATURES
Zhao L.G., Dumoulin S., O'Dowd N.P., Busso E.P. (UK)
- 05,10 pm ULTIMATE STATE CRITERIA OF STRUCTURAL ALLOYS EXPOSED TO THE ACTION OF ELECTRIC CURRENT PULSES
Novogrudsky L.S. (Ukraine)
- 05,30 pm MODEL OF INFLUENCING FACTORS FOR HYDROGEN DAMAGES OF BOILER EVAPORATOR TUBES
Djukic M., Sijacki Zeravcic V., Bakic G., Milanovic D., Andjelic B. (Serbia and Montenegro)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 8: Advances In Dynamic Failure Mechanics

Chairman: Ravichandran G. (USA)

- 04,10 pm CRACK PROPAGATION IN FUNCTIONALLY GRADED MICROPOROUS THERMOVISCOPLASTIC MATERIALS
Love B.M., Batra R.C. (USA)
- 04,30 pm AN EXPERIMENTAL/NUMERICAL INVESTIGATION OF THE DYNAMIC FRACTURE CHARACTERISTICS OF PMMA
Murphy N., Ivankovic A. (Ireland)
- 04,50 pm BEHAVIOUR OF HIGH-STRENGTH CONCRETE AT HIGH LOADING RATES
Ortlepp S., Curbach M. (Germany)
- 05,10 pm COMBINED LOADING MODE: THE BRITTLE FRACTURE MECHANISM ANALYSIS
Petrov V.N., Lepov V.V., Semyonov K.N. (Russia)
- 05,30 pm NUMERICAL MODELLING OF FORCED VIBRATIONS OF AN ELASTIC CRACKED BODY UNDER UNILATERAL CONTACT WITH A PUNCH
Bobylov A.A., Dobrova Y.A. (Ukraine)

04,10-05,50 pm

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

CS 3

Chairman: Ohtsuka N. (Japan)

- 04,10 pm SIMULATION TOOLS APPLICATION IN ITALIAN AIR FORCE FACILITIES:
AN EXAMPLE
Dolce F. (Italy)
- 04,30 pm THREE-DIMENSIONAL THERMOMECHANICAL BUCKLING OF
FUNCTIONALLY GRADED PLATES
Na K.S., Kim J.H. (South Korea)
- 04,50 pm NUMERICAL APPROACH AND EXPERIMENTAL VALIDATION OF
COMPOSITE SOUNDPROOFING PANELS FOR AERONAUTICAL
APPLICATIONS
Leofanti G., Marchetti M., Pulvirenti G., Vocca D., Turrís F. (Italy)
- 05,10 pm STUDY OF INTERACTION AND COALESCENCE OF MULTIPLE SMALL
SURFACE CRACKS IN A HIGH STRENGTH ALUMINIUM ALLOY
Liu Q., Wang C.-H., Barter S.A., Sharp P.K. (Australia)
- 05,30 pm ASSESSMENT OF STEADY STATE TEARING IN TENSION-DOMINANT
CRACK GEOMETRIES
Naumenko V.P., Skrypnyk Yu.D. (Ukraine)

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

CS 1

Chairman: Amde A.M. (USA)

- 04,10 pm INFLUENCE OF STRESS STATE AND TEMPERATURE ON THE STRENGTH
OF EPOXY RESINS
*Fiedler B. (Germany), Hobbiebrunken T., Hojo M. (Japan),
Schulte K. (Germany)*
- 04,30 pm STRESS CORROSION CRACK GROWTH IN ENGINEERING PLASTICS
Choi B.-H., Zhou Z., Sehanobish K., Chudnovsky A. (USA)
- 04,50 pm CRACK INITIATION IN ENGINEERING THERMOPLASTICS RESULTING
FROM CHEMICAL DEGRADATION
Choi B.-H., Zhou Z., Chudnovsky A., Sehanobish K. (USA)
- 05,10 pm ASR-SENSITIVE SLOW-LATE-AGGREGATES; MACRODAMAGE
AND MICROSTRUCTURE
Stark J., Berninger A.M., Freyburg E. (Germany)
- 05,30 pm ACTION OF WATER COOLED COPPER END CHILLS DURING SOLIDIFICATION
ON FRACTURE BEHAVIOR OF ALUMINUM ALLOY/QUARTZ MMCs
Hemanth J. (India)

04,10-05,50 pm

Venezia Room

Topic 07 (CONCR): CONCRETE & ROCKS

CS 1

Chairman: Shah S.P. (USA)

- 04,10 pm A MODIFICATION OF THE RANDOM MIDPOINT DISPLACEMENT METHOD FOR GENERATING ROCK FRACTURE SIMILAR SURFACES
Gothäll R., Eriksson M., Stille H. (Sweden)
- 04,30 pm ON FLUID-DRIVEN CRACK PROPAGATION ALONG BIMATERIAL INTERFACES
Zhang X., Jeffrey R. (Australia)
- 04,50 pm THE VARIATION OF THE GRADING ENTROPY DUE TO SOIL DEGRADATION IN SOME LABORATORY TESTS
*Imre E. (Hungary), Fityus S. (Australia),
Trang Q.P., Albert P., Telekes G. (Hungary)*
- 05,10 pm AN ELASTOPLASTIC SHEAR-FRACTURE MODEL FOR SOIL AND SOFT ROCK
Lo K.W., Nikraz H., Tamilselvan T., Zhao M.M. (Singapore)
- 05,30 pm ROUGHNESS DEVELOPMENT OF MORTAR FRACTURE SURFACES
Mourot G., Morel S., Bouchaud E., Valentin G. (France)

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT

MS 1 - 1: Environmental Degradation of Materials:

Hydrogen Embrittlement

Chairman: Somerday B. (USA)

- 04,10 pm HYDROGEN EFFECTS ON MATERIALS FOR THE HYDROGEN ECONOMY
Jones R.H. (USA)
- 04,30 pm TIME-DEPENDENT INTERGRANULAR BRITTLE FRACTURE
McMahon Jr. C.J. (USA)
- 04,50 pm HYDROGEN ENVIRONMENT EMBRITTLEMENT OF METALS IN HIGH-PRESSURE HYDROGEN STORAGE
Fukuyama S., Zhang L., Yokogawa K. (Japan)
- 05,10 pm MECHANISMS OF HYDROGEN-ASSISTED FRACTURE IN AUSTENITIC STAINLESS STEEL WELDS
Somerday B.P., Balch D.K., Novak P., Sofronis P. (USA)
- 05,30 pm THE EFFECT OF HYDROGEN DIFFUSION BEHAVIOR ON THE EMBRITTLEMENT OF STEEL UNDER HYDROGEN ATMOSPHERIC CONDITION
Yokobori Jr. A.T., Wada Y., Iwadate T., Yamada K., Ohmi T. (Japan)

04,10-05,50 pm

Napoli Room

Topic 08 (CORR): CORROSION

SS 1 - 2: Corrosion and Fatigue of Aging Aircraft Systems

Chairman: Dietzel W. (Germany)

- 04,10 pm SHOT-PEENING EFFECT IN CORROSION FATIGUE STRENGTH OF STRUCTURAL MATERIALS
Ebara R. (Japan)
- 04,30 pm STRESS CORROSION CRACKING: A CANADIAN PROSPECTIVE FOR OIL AND GAS PIPELINE
Elboudjaini M., Shehata M.T. (Canada)
- 04,50 pm CRACK GROWTH BEHAVIOUR OF LOW-ALLOY STEELS FOR PRESSURE BOUNDARY COMPONENTS UNDER TRANSIENT LWR OPERATING CONDITIONS - CASTOC, PART II: VVER CONDITIONS
Ernestová M., Zamboch M. (Czech Republic), Devrient B. (Germany), Ehrnstén U. (Finland), Foehl J. (Germany), Gómez-Briceño D., Lapeña J. (Spain), Roth A. (Germany), Seifert H.P., Ritter S. (Switzerland), Weissenberg T. (Germany)
- 05,10 pm ENVIRONMENTALLY ASSISTED BRITTLE FRACTURE OF NICKEL-BASE SUPERALLOYS AT HIGH TEMPERATURES
Krupp U., Wagenhuber P. (Germany), Kane W.M., Jacobs T., McMahon Jr. C.J. (USA)
- 05,30 pm THE EFFECT OF MULTI-AXIAL STRESS COMPONENT ON CREEP CRACK GROWTH RATE CONCERNING STRUCTURAL BRITTLINESS
Yokobori Jr. A.T., Sugiura R., Tabuchi M., Fuji A., Adachi T., Yokobori T. (Japan)

Genova Room

Topic 43 (THIN): THIN FILMS

SS 1 - 2: Mechanical Properties of Thin Films

Chairman: Dauskardt R.H. (USA)

- 04,10 pm AN ATOMISTIC VIEW OF INTERFACE SLIDING AND DISLOCATION PLASTICITY IN THIN FILMS
Shen Y.-L., Leger R.W. (USA)
- 04,30 pm SELF-ORGANIZED CRACK PATTERNS IN THIN FILMS
Lu W., Yu H.-C. (USA)
- 04,50 pm COUPLED ATOMISTIC-CONTINUUM ANALYSIS OF NANOWIRES AND NANOFILMS
Zimmerman J.A., Klein P.A. (USA)
- 05,10 pm CONSTRAINED DIFFUSIONAL CREEP IN ULTRA THIN COPPER FILMS DEPOSITED ON SUBSTRATES
Buehler M.J., Hartmaier A., Gao H. (Germany)
- 05,30 pm EFFECT OF OXYGEN ON SUBCRITICAL DELAMINATION OF THIN Cu FILMS FROM CERAMIC SUBSTRATE LAYERS
Baker S.P. (USA)

04,10-05,50 pm

Catania Room

**Topic 31 (NDE): NONDESTRUCTIVE EXAMINATION & MONITORING
SS 1 - 1: Damage Evaluation of Concrete by Nondestructive Monitoring**

Chairman: Shiotani T. (Japan)

- 04,10 pm IDENTIFICATION OF MICROCRACKING PROCESS IN FRACTURE PROCESS ZONE BY AE
Ohtsu M. (Japan)
- 04,30 pm APPLICATION OF IMPACT-ECHO TECHNIQUES FOR CRACK DETECTION AND CRACK PARAMETER ESTIMATION IN CONCRETE
Grosse C.U., Reinhardt H.W., Krüger M., Beutel R. (Germany)
- 04,50 pm NUMERICAL EXPERIMENT ON DETECTING VOIDS IN CONCRETE BY SIBIE
Ata N., Ohtsu M. (Japan)
- 05,10 pm NDT FOR DETECTING VOIDS IN POST-TENSIONING TENDON DUCT BY SIBIE
Watanabe T., Hashimoto C., Ohtsu M. (Japan)
- 05,30 pm EXPERIMENTAL STUDY ON APPLICABILITY OF MEASURING METHOD OF CHLORIDE CONTENT USING ELECTROMAGNETIC WAVE IN REINFORCED CONCRETE STRUCTURES
Mizobuchi T., Suda K., Hayashi D., Yokozeki K. (Japan)

Bologna Room

**Topic 36 (POLYM): POLYMERS
SS 1 - 1: Crack Propagation and Fracture in Advanced Polymeric Materials**

Chairlady: Pruitt L.A. (USA)

- 04,10 pm THE ROLE OF MICROSTRUCTURE ON THE FATIGUE AND FRACTURE PROPERTIES OF MEDICAL GRADE ULTRA HIGH MOLECULAR WEIGHT POLYETHYLENE
Pruitt L.A., Simis K.S., Bistolfi A., Bellare A. (USA)
- 04,30 pm FATIGUE FRACTURE OF POLY(METHYL METHACRYLATE) BONE CEMENT CONTAINING RADIOPACIFIER NANOPARTICLES
Bellare A., Turell M.E., Gomoll A., Thornhill T.S. (USA)
- 04,50 pm THE EFFECT OF SURFACE TERRACING AND CONFINED NANOPARTICLES ON CRAZING IN SYMMETRIC PS-B-P2VP THIN FILMS
Lee J.-Y., Crosby A.J. (USA)
- 05,10 pm A MATERIAL FORCE ANALYSIS OF CRACK GROWTH IN A VISCOELASTIC STRIP
Nguyen T.D., Govindjee S. (USA)
- 05,30 pm MECHANICAL STRENGTH OF INTERFACES IN THERMOPLASTIC POLYMERS
Kausch H.H. (Switzerland), Grellmann W. (Germany)

Thursday, March 24

10,30 am-12,10 pm

10,30 am-12,10 pm

Auditorium

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 9: Physics and Scaling in Fracture

Chairman: Kalia R. (USA)

- 10,30 am INCIPIENT SPALLATION FRACTURE IN LIGHT METALS FROM 3D X-RAY TOMOGRAPHY, 2D MICROSCOPY, AND MOLECULAR DYNAMICS SIMULATIONS
Belak J., Cazamias J.U., Chau R., Haupt D., Kinney J.H., Kumar M., Minich R., Rudd R.E., Seppälä E.T. (USA)
- 11,10 am ATOMISTIC MULTISCALE SIMULATIONS OF FRACTURE
Bernstein N. (USA)
- 11,30 am FIRST-PRINCIPLES CALCULATIONS OF TENSILE STRENGTH OF COPPER-ALUMINA INTERFACES AND THE DEVELOPMENT OF INTERATOMIC POTENTIALS
Tanaka S., Yang R., Kohyama M. (Japan)
- 11,50 am DYNAMIC FRACTURE TOUGHNESS DETERMINED USING MOLECULAR DYNAMICS
Swadener J.G., Baskes M.I., Nastasi M. (USA)

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 9: Computational Fracture Mechanics

Chairman: Brocks W. (Germany)

- 10,30 am DETERMINATION OF THE INDENTATION RESISTANCE OF GRAVEL AS THE BASIS FOR SAFETY PROGNOSSES OF GRAVEL-BURIED STEEL PIPELINES SUBJECTED TO ROCKFALL
Pichler B., Hellmich C., Mang H.A. (Austria)
- 11,10 am IDENTIFICATION OF SHEAR WALL FAILURE MODE
Červenka V., Novák D., Lehký D., Pukl R. (Czech Republic)
- 11,30 am MODELING THE EVOLUTION OF SLOPE FAILURE AS A CRACK PROPOGATION PROBLEM
Lin J.-S. (USA), Ku C.-Y. (Taiwan)
- 11,50 am MODELLING OF CRACK PROPAGATION THROUGH FRAGMENTED SOLIDS
Galybin A.N., Dyskin A.V. (Australia)

10,30 am-12,10 pm

Berlino Room

Topic 16 (FATIG): FATIGUE

CS 1

Chairman: Scavino G. (Italy)

- 10,30 am MODELING SMALL FATIGUE CRACK GROWTH IN CAST ALUMINUM ALLOYS
Shyam A., Allison J.E., Jones J.W. (USA)
- 10,50 am LIFETIME AND DAMAGE BEHAVIOUR OF A CAST ALUMINIUM ALLOY UNDER TMF AND SUPERIMPOSED TMF/HCF LOADING
Luft J., Beck T., Löhe D. (Germany)
- 11,10 am EFFECTS OF DEGASSING PROCESS ON HIGH CYCLE FATIGUE PROPERTY IN CASTING ALUMINUM ALLOY
Ochi Y., Masaki K., Matsumura T., Kumagai Y., Hamaguchi T. (Japan)
- 11,30 am FATIGUE LIFE OF AlCu4Mg1 ALUMINIUM ALLOY UNDER CONSTANT-AMPLITUDE IN- AND OUT -OF- PHASE BENDING WITH TORSION
Lagoda T., Ogonowski P. (Poland)
- 11,50 am EVALUATION OF CREEP BEHAVIOUR AND FATIGUE LIFE UNDER TMF-LOADING FOR ALLOY AlCuBiPb
Minichmayr R., Riedler M., Eichlseder W. (Austria)

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

SS 1 - 1: Micro- or Meso-Scale

Chairman: Panin V. (Russia)

- 10,30 am MULTILEVEL WAVE MODEL IN FRACTURE MESOMECHANICS
Panin V.E. (Russia)
- 11,10 am NUMERICAL INVESTIGATION OF DEFORMATION AND FRACTURE IN ALUMINUM-ALUMINA AT THE MESOSCALE
Balokhonov R.R., Romanova V.A. (Russia)
- 11,30 am NUMERICAL MODELING OF SHEAR LOCALIZATION IN ELASTOPLASTIC MATERIALS
Bushmanova O.P., Revuzhenko A.F. (Russia)
- 11,50 am MESOSCOPIC LEVELS OF PLASTIC FLOW WITHIN SURFACE LAYERS OF POLYCRYSTALS AND THEIR FATIGUE FRACTURE UNDER CYCLIC BENDING
Panin V.E., Egorushkin V.E., Elsukova T.F., Panin A.V., Kuzina O.Yu. (Russia)

10,30 am-12,10 pm

Parigi Room

Topic 32 (NLMF): NONLINEAR FRACTURE MECHANICS

MS 1 - 3: Nonlinear Fracture Mechanics

Chairman: Needleman A. (USA)

- 10,30 am DYNAMIC FRACTURE OF NONLINEAR SOLIDS WITH MULTI-PARTICLE MODELING
Marder M. (USA)
- 10,50 am A STUDY OF DYNAMIC CRACK INSTABILITIES USING COHESIVE CONTINUUM METHODS
Klein P.A., Nguyen T.D. (USA)
- 11,10 am MODES OF DYNAMIC RUPTURE ON INTERFACES WITH NONLINEAR RATE AND STATE FRICTION LAWS
Lapusta N. (USA)
- 11,30 am NUMERICAL SIMULATIONS OF CRACK TIP STRESS-STRAIN FIELDS IN SINGLE CRYSTAL NICKEL-BASE SUPERALLOYS AT HIGH TEMPERATURE UNDER CREEP-FATIGUE LOADINGS
Marchal N., Flouriot S., Forest S., Remy L. (France)
- 11,50 am A VARIATIONAL APPROACH OF FATIGUE DEBONDING
Jaubert A., Marijo J.-J. (France)

Roma Room

Topic 05 (COMPO): COMPOSITES

SS 2 - 2: Failure of Ceramic-, Metal- and Polymer-based Composites

Chairman: Daniel I.M. (USA)

- 10,30 am MODE I INTERLAMINAR FRACTURE OF CARBON/EPOXY MULTIDIRECTIONAL LAMINATES
Pereira A.B., De Morais A.B., De Moura M.F.S.F., Magalhães A.G. (Portugal)
- 10,50 am FAILURE MECHANISMS IN BRITTLE LAMINATES
Suiker A.S.J. (The Netherlands), Fleck N.A. (UK)
- 11,10 am INVESTIGATION OF THE DAMAGE BEHAVIOUR OF NOVEL BIAXIAL REINFORCED WEFT KNITTED COMPOSITES
Hufenbach W., Böhm R., Langkamp A., Kroll L., Gude M. (Germany)
- 11,30 am FREE VIBRATION CHARACTERISTICS OF DELAMINATED COMPOSITE ROTATING CANTILEVER SHALLOW SHELLS
Karmakar A., Mishra T.K. (India), Kishimoto K. (Japan)
- 11,50 am THREE-DIMENSIONAL CHARACTERIZATION OF CONSTITUTIVE BEHAVIOR AND FAILURE OF TEXTILE COMPOSITES
Daniel I.M., Abot J.L., Luo J.-J., Schubel P.M. (USA)

10,30 am-12,10 pm

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 9: Damage Mechanics

Chairman: Borino G. (Italy)

- 10,30 am COMPOSITE DAMAGE MODEL FOR DYNAMIC FRACTURE PREDICTION: IDENTIFICATION ISSUES
Allix O., Feissel P. (France)
- 10,50 am FRACTURE OF Ti/SiC COMPOSITES AT ROOM AND HIGH TEMPERATURE: EXPERIMENTS AND SIMULATIONS
González C., Weck A., Llorca J. (Spain)
- 11,10 am A CONTINUUM MODEL FOR SELF-HEALING COMPOSITES
Greco F., Lonetti P. (Italy)
- 11,30 am COMPUTATIONAL MICROMECHANICS OF SPHERE-REINFORCED COMPOSITES
Segurado J., González C., Llorca J. (Spain)
- 11,50 am NUMERICAL AND EXPERIMENTAL TRACING OF THE CRACK PROPAGATION USING ADAPTIVE EXTENDED FINITE ELEMENTS AND PHOTOGRAMMETRY
Mombartz M., Chudoba R., Hegger J. (Germany)

Atene Room

Topic 27 (MET): METALLIC MATERIALS

CS 5

Chairman: Sglavo V.M. (Italy)

- 10,30 am STATIC VS CYCLIC WORK HARDENING BEHAVIOUR OF GAS ATOMIZED TiAl ALLOY POWDER COMPACTS
Berteaux O., Thomas M., Henaff G., Jouiad M. (France)
- 10,50 am SIZE EFFECTS ON FLOW STRESS AND FAILURE OF Ti-6-22-22S AND AI7075 OVER A WIDE RANGE OF STRAIN RATES
Meyer L.W., Herzig N., Krüger L. (Germany)
- 11,10 am THREE DIMENSIONAL EFFECTS ALONG THE CRACK FRONT INFLUENCING THE VALIDITY CRITERIA FOR DETERMINING FRACTURE TOUGHNESSES
*Fernández Zúñiga D. (Spain), Kalthoff J.F. (Germany),
Fernández Canteli A., Grasa J., Doblaré M. (Spain)*
- 11,30 am CRACKING MECHANISMS IN A HOT-DIP ZINC COATED STEEL
Di Cocco V., Iacoviello F., Natali S. (Italy)
- 11,50 am NUMERICAL THREE-DIMENSIONAL CRACK GROWTH SIMULATION FOR COMPONENTS WITH MULTIPLE CRACKS
Fulland M., Richard H.A. (Germany)

10,30 am-12,10 pm

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

MS 1 - 9: Advances In Dynamic Failure Mechanics

Chairman: Sun C.T. (USA)

- 10,30 am DYNAMIC TRANSVERSE COMPRESSIVE FAILURE OF UNIDIRECTIONAL FIBER REINFORCED COMPOSITES
Vural M., Kidd T.H., Ravichandran G. (USA)
- 10,50 am DYNAMIC RESPONSE AND SPALL STRENGTH OF S2 GLASS FIBER REINFORCED POLYMER COMPOSITE
Tsai L., Prakash V. (USA)
- 11,10 am ISO-CONTOUR MAPS FOR BALLISTIC PERFORMANCE OF THICK METALLIC ARMOUR
Srivathsa B., Ramakrishnan N. (India)
- 11,30 am IMPACT-DYNAMIC BEHAVIOUR OF AL-TRIP STEEL
Verleysen P., Van Slycken J., Degrieck J., De Cooman B.C., Samek L. (Belgium)
- 11,50 am PARTICLE SIZE AND FILLER-MATRIX ADHESION EFFECTS ON DYNAMIC FRACTURE OF GLASS-FILLED EPOXY COMPOSITES
Tippur H., Kitey R. (USA)

Copenhagen Room

Topic 01 (AER): AERONAUTICS & AEROSPACE

CS 4

Chairman: Newman Jr. J.C. (USA)

- 10,30 am RESIDUAL STRENGTH ANALYSIS USING CTOA CRITERIA FOR FUSELAGE STRUCTURES CONTAINING MULTIPLE SITE DAMAGE
Hsu C.-L., Tom J.J., Anderson B.L. (USA)
- 10,50 am SKIN-STRINGER DEBONDING AND DELAMINATION ANALYSIS IN COMPOSITE STIFFENED SHELLS
Rikards R., Kalnins K., Ozolinsh O. (Latvia)
- 11,10 am THE THIN PLATES ON ASYMMETRICAL THEORY OF ELASTICITY
Sargsyan S.H. (Armenia)
- 11,30 am MECHANICAL PROPERTIES AND FRACTURE MECHANISMS OF BURN RESISTANT Ti-25V-15Cr-2Al-0.2C ALLOYS
Udomphol T., Voice W., Bowen P. (UK)
- 11,50 am FRACTURE MECHANICS ANALYSIS OF NOTCH FATIGUE OF A SINGLE CRYSTAL SUPERALLOY—CMSX-4
Wu X.J. (Canada), Miller M. (UK), Zhang Z. (Canada), Miller J., Reed P.S.A. (UK)

10,30 am-12,10 pm

Firenze Room

Topic 15 (FAIL): FAILURE ANALYSIS

CS 2

Chairman: Lacidogna G. (Italy)

- 10,30 am RISK ASSESSMENT OF LOW-TEMPERATURE CRACKING OF ASPHALT – AN EXPERIMENTAL STUDY
Spiegel M., Wistuba M., Lackner R., Blab R. (Austria)
- 10,50 am MESHLESS ANALYSIS OF CRACK PROPAGATION IN MULTIPHASE MATERIAL
Chen Y., Lee J.D., Oskard M.S., Eskandarian A. (USA)
- 11,10 am DAMAGE MODEL FOR FAILURE ANALYSIS WITH A VIEW TO HYDROMECHANICAL PROBLEMS
Pijaudier-Cabot G., Jason L. (France), Chatzigeorgiou G. (Greece)
- 11,30 am SOIL CRACKING DUE TO MOISTURE DIFFUSION AND CRACKING PREVENTION
Sumarac D., Lelovic S. (Serbia and Montenegro), Krajcinovic D. (USA)
- 11,50 am SELF-ASSEMBLED MONOLAYERS AND MODE-MIX DEPENDENT TRACTION-SEPARATION LAWS FOR INTRINSIC INTERFACIAL FRACTURE
Liechti K.M. (USA), Mello A.W. (Brazil)

Venezia Room

Topic 10 (DAMS): DAMS

SS 1 - 1: Fracture in Dams

Chairman: Maier G. (Italy)

- 10,30 am FATIGUE FRACTURE IN CONCRETE STRUCTURES
Barpi F., Valente S. (Italy)
- 10,50 am BEHAVIOR OF MASS CONCRETE USING SMEARED CRACK APPROACH IN THREE DIMENSIONAL PROBLEMS
Mirzabozorg H., Ghaemian M. (Iran)
- 11,10 am IN SITU MECHANICAL CHARACTERISATION OF DAM CONCRETE AND STRESS STATE BY DILATOMETRIC MEASUREMENTS AND INVERSE ANALYSIS
Maier G., Lettieri M.A., Piola L. (Italy)
- 11,30 am AN EXPERIMENTAL AND NUMERICAL INVESTIGATION OF CONCRETE DAM JOINTS
Puntel E., Bolzon G. (Italy), Saouma V.E. (USA)
- 11,50 am EXPERIMENTS FOR DETERMINING THE DOUBLE-K FRACTURE PARAMETERS OF CONCRETE OF THE THREE GORGES DAM
Zhao Z., Zhou H., Li Q., Xu S. (China)

10,30 am-12,10 pm

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT

MS 1 - 2: Environmental Degradation of Materials: Hydrogen Embrittlement

Chairman: Haidemenopoulos G.N. (Greece)

- 10,30 am ROLE OF STRAIN-ASSISTED TRANSPORT OF HYDROGEN ON THE INTERGRANULAR FRACTURE OF NICKEL BASE ALLOYS
Chêne J., Brass A.-M. (France)
- 10,50 am DISLOCATION MOBILITY AND HYDROGEN – A BRIEF REVIEW
Robertson I.M., Birnbaum H.K. (USA)
- 11,10 am SEGREGATION OF HYDROGEN AT DISLOCATIONS
Kirchheim R., Pundt A. (Germany)
- 11,30 am MECHANISTIC INSIGHTS ON ENVIRONMENTAL DEGRADATION FROM NANOMETER-SCALE CRACK TIP MEASUREMENTS
Bruemmer S.M., Thomas L.E. (USA)
- 11,50 am CORROSION-INDUCED HYDROGEN EMBRITTLEMENT IN ALUMINUM ALLOY 2024
Kamoutsi H., Haidemenopoulos G.N., Bontozoglou V., Pantelakis S. (Greece)

Napoli Room

Topic 08 (CORR): CORROSION

SS 1 - 3: Corrosion and Fatigue of Aging Aircraft Systems

Chairman: Sarrazin-Baudoux C. (France)

- 10,30 am DEGRADATION OF OIL TRUNKLINE STEEL CAUSED BY INTERNAL CORROSION
Nykyforchyn H.M. (Ukraine)
- 10,50 am THE CHARACTERISTICS OF CORROSION FATIGUE CRACK GROWTH RATE (CFCGR) FOR THE PETROLEUM REFINING PRESSURE VESSEL MATERIALS (2.25Cr-1Mo STEEL) – THE EFFECT OF HYDROGEN EMBRITTLEMENT
Taketomi S., Yokobori Jr. A.T., Takei K., Wada Y., Tanaka Y., Iwadate T. (Japan)
- 11,10 am CORROSION RESISTANCE OF Ti-6Al-4V ALLOY FINISHED BY AN ADVANCED ELID GRINDING SYSTEM
Mizutani M., Komotori J., Katahira K., Ohmori H. (Japan)
- 11,30 am A STUDY ON CREEP CRACK PROPAGATION BEHAVIOUR OF AGED CrMoV FOR A LONG TERM USED TURBINE
Takeda H., Inukai T. (Japan)
- 11,50 am CREEP FRACTURE BEHAVIOUR OF JOINTS SOLDERED BY A NANO-COMPOSITE SOLDER, LEAD-FREE AND CONVENTIONAL TIN-LEAD SOLDERS
Zhang X.P. (Australia, China), Shi Y.W. (China), Mai Y.-W. (Australia), Shrestha S., Dorn L. (Germany)

10,30 am-12,10 pm

Genova Room

Topic 43 (THIN): THIN FILMS

SS 1 - 3: Mechanical Properties of Thin Films

Chairman: Hartmaier A. (Germany)

- 10,30 am ACCELERATED DEBONDING AND CRACKING IN THIN-FILM STRUCTURES: CHEMICAL REACTION RATE AND LOADING EFFECTS
Guyer E.P., Dauskardt R.H. (USA)
- 10,50 am PHASE ANGLE IN INDENTATION-INDUCED DELAMINATION WITH BUCKLING AND ITS APPLICATION TO INDENTATION DELAMINATION IN ZnO FILM/SI SUBSTRATE SYSTEMS
Zhao M.-H., Huang B., Zhang T.-Y. (China)
- 11,10 am CRACK NUCLEATION AND PROPAGATION DURING FATIGUE OF THIN METAL FILMS
Kraft O., Schwaiger R. (Germany), Zhang G.P. (China), Volkert C.A. (Germany)
- 11,30 am SIZE EFFECT ON FRACTURE IN THIN COPPER/TANTALUM BILAYERS ON POLYIMIDE SUBSTRATES
Spolenak R., Gruber P., Arzt E. (Germany)
- 11,50 am A VARIATIONAL APPROACH TO STRESS-INDUCED INSTABILITIES IN HETEROEPITAXIAL GROWTH
Bonnetier E., Brassel M., Chambolle A., Jouve F. (France)

Catania Room

Topic 31 (NDE): NONDESTRUCTIVE EXAMINATION & MONITORING

SS 1 - 2: Damage Evaluation of Concrete by Nondestructive Monitoring

Chairman: Ohtsu M. (Japan)

- 10,30 am BRAZILIAN TEST OF CONCRETE EVALUATED BY AE
Reinhardt H.W., Finck F., Grosse C., Kurz J. (Germany)
- 10,50 am MICROMECHANICS OF CORROSION CRACKING IN REINFORCED CONCRETE BY AE
Uddin F.A.K.M., Ohtsu M. (Japan)
- 11,10 am DAMAGE QUANTIFICATION FOR CONCRETE STRUCTURES BY IMPROVED b-VALUE ANALYSIS OF AE
Shiotani T., Luo X., Haya H., Ohtsu M. (Japan)
- 11,30 am DAMAGE MECHANICS OF CARBONATED CONCRETE BY AE RATE-PROCESS ANALYSIS
Suzuki T., Komeno G., Ohtsu M. (Japan)
- 11,50 am MONITORING CORROSION RATE OF CONCRETE BY AC IMPEDANCE SPECTROSCOPY
Ismail M.A., Ohtsu M. (Japan)

10,30 am-12,10 pm

Bologna Room

Topic 36 (POLYM): POLYMERS

SS 1 - 2: Crack Propagation and Fracture in Advanced Polymeric Materials

Chairman: Bellare A. (USA)

- 10,30 am TEMPERATURE EFFECTS ON THE FATIGUE OF HIGHLY FILLED PMMA
Obakponovwe O., Williams G. (UK)
- 10,50 am PLANE STRESS FRACTURE TOUGHNESS OF DUCTILE POLYMERIC FILMS: EFFECT OF STRAIN RATE ON THE ESSENTIAL WORK OF FRACTURE PARAMETERS
Pegoretti A., Bertoldi E., Riccò T. (Italy)
- 11,10 am FRACTURE BEHAVIOR OF BINARY BLOCK COPOLYMERS BLENDS
Weidisch R., Staudinger U., Satapathy B., Lach R., Grellman W., Knoll K. (Germany)
- 11,30 am CRACK PROPAGATION IN RUBBER-LIKE MATERIALS
Heinrich G., Horst T., Struve J., Gerber G. (Germany)
- 11,50 am CALIBRATION OF A COHESIVE ZONE FOR CRAZING IN GLASSY POLYMERS
Saad N., Estevez R., Olagnon C., Séguéla R. (France)

Thursday, March 24

02,00-03,40 pm

02,00-03,40 pm

Londra Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 10: Computational Fracture Mechanics

Chairman: Pook L.P. (UK)

- 02,00 pm EXPERIENCES WITH SOME EUROPEAN FLAW ASSESSMENT PROCEDURES
Zerbst U. (Germany), Ainsworth R.A. (UK)
- 02,20 pm LARGE SCALE SIMULATION OF FRACTURE NETWORKS
Nukala P.K.V.V., Simunovic S. (USA)
- 02,40 pm PERIDYNAMIC FRACTURE AND DAMAGE MODELLING OF MEMBRANES AND NANOFIBER NETWORKS
Bobaru F., Silling S.A., Jiang H. (USA)
- 03,00 pm FINE DESCRIPTION OF FRACTURE BY USING DISCRETE PARTICLE MODEL
Delaplace A. (France)
- 03,20 pm MATHEMATICAL MODELLING OF DYNAMIC PROCESSES OF IRREVERSIBLE DEFORMING, MICRO- AND MACROFRACTURE OF DAMAGEABLE SOLIDS AND STRUCTURES
Kiselev A.B., Nekhaeva O.V. (Russia)

Berlino Room

Topic 16 (FATIG): FATIGUE

CS 2

Chairman: Barpi F. (Italy)

- 02,00 pm LOW CYCLE FATIGUE BEHAVIOUR OF RAILWAY WHEEL STEELS INCLUDING TEMPERATURE EFFECTS
Ahlström J., Karlsson B., Mirsch M. (Sweden)
- 02,20 pm RELATIONSHIP BETWEEN VICKERS HARDNESS AND FATIGUE STRENGTH
Hirano A., Sakane M., Hamada N. (Japan)
- 02,40 pm FATIGUE DAMAGE OF SHAFT WITH THE COLLAR FORMED BY A NEW DEFORMATION PROCESSING METHOD FOR ENLARGING PARTIAL DIAMETER
Zhu X., Okabe N., Mori K., Tsutsumi M., Iura T. (Japan)
- 03,00 pm EFFECTS OF ELECTROPLATED ZINC-NICKEL ALLOY COATINGS ON THE FATIGUE STRENGTH OF AISI 4340 HIGH STRENGTH STEEL
Voorwald H.J.C., Miguel I.M., Costa M.Y.P. (Brazil)
- 03,20 pm EFFECT OF SURFACE ROUGHNESS OF SUBSTRATE ON FATIGUE STRENGTH OF THERMALLY SPRAYED STEEL WITH SELF-FLUXING ALLOY
Akebono H., Komotori J., Shimizu M., Fukumoto M. (Japan)

02,00-03,40 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

SS 1 - 2: Micro- or Meso-Scale

Chairman: Makarov P.V. (Russia)

- 02,00 pm PHYSICAL MESOMECHANICS OF QUASI-VISCOUS FAILURE: THEORY AND EXPERIMENT
Egorushkin V.E., Panin V.E., Panin A.V. (Russia)
- 02,20 pm SELF-ORGANIZATION OF SCALE LEVELS OF PLASTIC FLOW IN FRACTURE MESOMECHANICS
Goldstein R.V., Panin V.E., Derevyagina L.S., Osipenko N.M. (Russia)
- 02,40 pm THE FUNDAMENTAL FUNCTION OF ROTATION AT THE MESO-LEVEL IN DEFORMATION AND FRACTURE OF SOLIDS
Makarov P.V. (Russia)
- 03,00 pm FEATURES OF PLASTIC FLOW AND FRACTURE OF SUBMICROCRYSTALLINE ARMCR0-IRON WITH BANDED FRAGMENTED SUBSTRUCTURE
Son A. (Russia)
- 03,20 pm MESOSCALE LEVELS OF STRAIN AND FRACTURE OF COATED MATERIALS
Panin S. (Russia)

Parigi Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 10: Physics and Scaling in Fracture

Chairman: Duxbury P. (USA)

- 02,00 pm MOLECULAR ORBITAL STUDY ON INTERFACIAL STRENGTH BETWEEN OXIDE CLUSTER AND POLYIMIDE SUBSTRATE
Fujinami A., Ogata S., Shibutani Y., Yamamoto K. (Japan)
- 02,20 pm QUANTIZED FRACTURE MECHANICS AND STRENGTH OF DEFECTIVE NANOTUBES
Pugno N. (Italy), Ruoff R. (USA)
- 02,40 pm IDEAL SHEAR STRENGTHS AND BOND DIRECTIONALITY OF FCC AND BCC METALS
Ogata S. (Japan), Li J. (USA), Shibutani Y. (Japan), Yip S. (USA)
- 03,00 pm AB INITIO ANALYSIS ON IDEAL STRENGTH OF NANOSCALE THIN FILM
Umeno Y., Kushima A., Kitamura T. (Japan)
- 03,20 pm MACRO TO ATOMISTIC EXAMINATION OF DYNAMIC CLEAVAGE IN SINGLE CRYSTAL SILICON
Sherman D. (Israel)

02,00-03,40 pm

Roma Room

Topic 05 (COMPO): COMPOSITES

CS 1

Chairlady: Cannillo V. (Italy)

- 02,00 pm EXPERIMENTAL AND COMPUTATIONAL ANALYSES OF LEAD ZIRCONATE TITANATE REINFORCED GLASS MATRIX COMPOSITES FOR STRUCTURAL APPLICATIONS
Cannillo V., Tavoni F. (Italy), Garcia R.E. (USA), Boccaccini A.R. (UK)
- 02,20 pm FATIGUE, FRACTURE TOUGHNESS AND TENSILE PROPERTIES IN PARTICULATE ALUMINIUM METAL MATRIX COMPOSITES
Singh V., Prasad R.C. (India)
- 02,40 pm CHARACTERISATION OF FIBRE STRENGTH DISTRIBUTIONS IN MATRIX COATED MONOFILAMENT SILICON CARBIDE FIBRES
Pollard S.L., Laffargue J.B., Bowen P. (UK)
- 03,00 pm MATRIX FATIGUE DAMAGE EVOLUTION IN A LONGITUDINAL CFRP COMPOSITE
Plumtree A. (Canada), Ostgathe M. (Germany)
- 03,20 pm NONLINEAR BEHAVIOR OF FUEL CELL MEMBRANE ASSEMBLIES
Reifsnider K., Huang X., Feshler M., Ju G. (USA)

Lisbona Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 10: Damage Mechanics

Chairman: Chaboche J.-L. (France)

- 02,00 pm ON THE INVESTIGATION OF MATERIAL STABILITY DURING THE SIMULATION OF DUCTILE DAMAGE IN METALLIC MATERIALS
Reusch F., Svendsen B. (Germany)
- 02,20 pm METAL FORMING PROCESSES IMPROVEMENT BY CONTINUUM DAMAGE MECHANICS
Saanouni K. (France)
- 02,40 pm DUCTILE TEARING OF 2024 ALUMINUM ALLOY PANELS
Bron F., Besson J. (France)
- 03,00 pm THE INFLUENCE OF THE TRIAXIALITY IN THE STABLE CRACK GROWTH MODELLING USING GTN MODEL
Vlcek L., Kozák V. (Czech Republic)
- 03,20 pm A DYNAMIC VOID GROWTH MODEL
Liu J., Zhang Z.L., Thaulow C. (Norway)

02,00-03,40 pm

Atene Room

Topic 27 (MET): METALLIC MATERIALS

CS 6

Chairman: Kalthoff J.F. (Germany)

- 02,00 pm FRACTURE MECHANISM OF A TIAL ALLOY
Chen J.H., Cao R., Zhang J., Wang G.Z. (China)
- 02,20 pm POLYCRYSTALLINE MICROSTRUCTURE AND SCATTER IN THE NUMBER OF CYCLES TO INITIATION OF A HIGH-CYCLE FATIGUE CRACK
Sauzay M., Jourdan T. (France)
- 02,40 pm INFLUENCE OF ENVIRONMENT, LOADING FREQUENCY AND TEMPERATURE ON FATIGUE CRACK GROWTH MECHANISMS IN TITANIUM LAMELLAR MICROSTRUCTURES
Sarrazin-Baudoux C. (France), Sansoz F., Ghonem H. (USA)
- 03,00 pm INVESTIGATION ON CYCLIC DEFORMATION BEHAVIOUR OF REINFORCED STEEL BARS
Baydoğan M., Uysal A., Kayali E.S., Çimenoglu H. (Turkey)

Dublino Room

Topic 23 (DYN): IMPACT & DYNAMICS

SS 1 - 1: Modeling and Simulation of Dynamic Fracture and Damage

Chairman: Chen E.P. (USA)

- 02,00 pm DISCONTINUOUS BIFURCATION ANALYSIS OF COUPLED RATE-DEPENDENT PLASTICITY AND DAMAGE
Hu W., Chen Z. (USA)
- 02,20 pm MULTISCALE MODELING AND SIMULATION OF CRACK PROPAGATION IN POLYCRYSTALLINE SOLIDS
Chen Y., Oskard M.S., Lee J.D., Eskandarian A. (USA)
- 02,40 pm NUMERICAL SIMULATION OF THE TAYLOR TEST WITH FRACTURE
Teng X., Wierzbicki T. (USA)
- 03,00 pm DETERMINATION OF DYNAMIC FRACTURE TOUGHNESS FOR BRITTLE MATERIALS WITH A MODIFIED SHPB
Weerasooriya T., Moy P., Casem D., Cheng M., Chen W. (USA)
- 03,20 pm IMPACT DAMAGE ANALYSIS OF THERMOPLASTIC OLEFINS (TPOS)
Jie M., Wei Y., Argento A., Chow C.L., Godlewski T.E., Gonzalez-Ronda L., Mielewski D.F. (USA)

02,00-03,40 pm

Copenhagen Room

Topic 26 (MEMS): MEMS

SS 1 - 1: Fracture and Fatigue at the Micro and Nano Scales

Chairman: Corigliano A. (Italy)

- 02,00 pm EFFECTS OF VARYING MEAN STRESS AND STRESS AMPLITUDE ON THE FATIGUE OF POLYSILICON
Ballarini R., Kahn H., Heuer A.H. (USA)
- 02,20 pm MATERIAL CHARACTERISATION AT THE MICRO SCALE THROUGH ON-CHIP TESTS
Cacchione F., De Masi B., Corigliano A., Ferrera M. (Italy)
- 02,40 pm SIMULATIONS OF NANOINDENTATION IN A NON-CRYSTALLINE METAL FILM
Shi Y., Falk M.L. (USA)
- 03,00 pm CONTINUUM AND ATOMISTIC MODELING OF DYNAMIC FRACTURE AT NANOSCALE
Buehler M.J. (Germany), Abraham F.F. (USA), Gao H. (Germany)
- 03,20 pm SENSITIVITY STUDY OF COMB-DRIVE ACTUATOR WITH FOLDED SUSPENSION
Krylov V., Moussay N., Bernstein Y. (Israel)

Firenze Room

Topic 14 (ELEC): ELECTRONIC MATERIALS

SS 1 - 1: Fracture Processes in Microelectronics

Chairman: Goldstein R.V. (Russia)

- 02,00 pm INVESTIGATION ON THE EFFECT OF IMPERFECT INTERFACE ON THE PROPERTIES OF LOVE WAVE PROPAGATION
Jin F. (China, Japan), Kishimoto K., Inoue H., Tateno T. (Japan)
- 02,20 pm MESOMECHANICAL ASPECTS OF THIN FILM FRACTURE
Panin A.V., Shugurov A.R. (Russia), Schreiber J. (Germany)
- 02,40 pm COHESIVE ZONES FOR FATIGUE DAMAGE IN SOLDER JOINTS
Erinç M., Schreurs P.J.G., Geers M.G.D. (The Netherlands)
- 03,00 pm CREEP AND CREEP-FATIGUE STANDARD TESTING FOR SOLDERS – JSMS RECOMMENDATION
Sakane M., Nose H., Takahashi H., Kitano M., Tsukada Y. (Japan)
- 03,20 pm BRITTLE FRACTURE AND NEAR-SURFACE DAMAGES IN ELECTRONIC MATERIALS DURING THEIR MULTI-WIRE-SAWING AND LAPPING USING LOOSE ABRASIVE
Britvin A.A., Litvinov M.Y., Litvinov Y.M. (Russia)

02,00-03,40 pm

Venezia Room

Topic 05 (COMPO): COMPOSITES

SS 3 - 1: Failure of Cement-based Composites

Chairman: Plizzari G. (Italy)

- 02,00 pm STRONG DISCONTINUITY APPROACH TO FRACTURE OF COMPOSITE MATERIALS
Oliver J., Huespe A.E., Linero D. (Spain)
- 02,20 pm OBTAINING THE CONSTITUTIVE TENSILE RELATION OF CONCRETE THROUGH INVERSE ANALYSIS
Antunes de Oliveira e Sousa J.L. (Brazil), Gettu R. (Spain)
- 02,40 pm TENSION SOFTENING CHARACTERISTICS IMMEDIATELY AFTER CRACKING OF SHORT FIBER REINFORCED MORTAR
Yamada K., Homma T., Ishiyama S. (Japan)
- 03,00 pm BRITTLE BEHAVIOR OF HIGH STRENGTH CONCRETE
Zhao Y., Li Z., Xu S. (China)
- 03,20 pm EFFECT OF INTERACTION BETWEEN COLLINEAR CRACKS ON THE STRENGTH DISTRIBUTION OF BRITTLE MATERIALS
Ciavarella M., Afferrante L., Valenza E. (Italy)

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT

MS 1 - 3: Environmental Degradation of Materials: Hydrogen Embrittlement

Chairman: Dietzel W. (Germany)

- 02,00 pm HYDROGEN DAMAGE IN THE CRACK TIP ENVIRONMENT
Begley M.R., Agnew S.R., Komaragiri U., Gangloff R.P. (USA)
- 02,20 pm NEW FRACTURE MECHANICS APPROACH TO CHARACTERIZE INTERNAL HYDROGEN EMBRITTLEMENT OF STEEL FOR FITNESS-FOR-SERVICE MODELING
Al-Rumaih A.M. (Saudi Arabia), Gangloff R.P. (USA)
- 02,40 pm ANALYSIS OF THE K-DOMINANCE CONDITION IN HYDROGEN ASSISTED CRACKING
Toribio J., Kharin V. (Spain)
- 03,00 pm MESOSCALE MODELING OF HYDROGEN ASSISTED CRACK GROWTH IN HETEROGENEOUS MATERIALS
Pfuff M., Dietzel W. (Germany)
- 03,20 pm CONCERNING THE RELATIVE IMPORTANCE OF DECOHESION VERSUS SLIP AND ADSORBED VERSUS SOLUTE HYDROGEN ON FRACTURE BEHAVIOUR
Lynch S.P. (Australia)

02,00-03,40 pm

Napoli Room

Topic 29 (MIXED): MIXED MODE

MS 1 - 1: Mixed Mode Crack Growth

Chairman: Narasimhan R. (India)

- 02,00 pm EFFECT OF NOTCH ROOT RADIUS ON MIXED MODE I/III FRACTURE TOUGHNESS OF MILD STEEL UNDER IMPACT CONDITIONS
Srinivas M., Kamat S.V., Rama Rao P. (India)
- 02,20 pm EFFECT OF ELEVATED TEMPERATURE ON THE MIXED MODE I/III FRACTURE TOUGHNESS OF ARMCO IRON
Kamat S.V., Srinivas M., Rama Rao P. (India)
- 02,40 pm TRENDS IN STATIC AND DYNAMIC MIXED-MODE FRACTURE
Manoharan M. (USA)
- 03,00 pm NUMERICAL SIMULATIONS OF MIXED-MODE DUCTILE FRACTURE INITIATION
Narasimhan R. (India)
- 03,20 pm NUMERICAL SIMULATION OF 3-D MIXED-MODE CRACK PROPAGATION ON BIMATERIAL INTERFACES
Herr A.F., Nied H.F. (USA)

Genova Room

Topic 41 (SMART): SMART MATERIALS & STRUCTURES

SS 1 - 1: Electromagnetic Fracture Mechanics of Smart Materials & Structures

Chairman: McMeeking R.M. (USA)

- 02,00 pm ELECTRIC FRACTURE AND POLARIZATION SWITCHING OF PIEZOELECTRIC CERAMICS: EXPERIMENT AND FINITE ELEMENT SIMULATION
Karaiwa M., Narita F., Shindo Y. (Japan)
- 02,20 pm A MODEL OF ELECTRIC FRACTURE AND FATIGUE OF FERROELECTRIC MATERIAL UNDER ELECTROMECHANICAL LOADING
Fang D.N., Mao G.Z. (China)
- 02,40 pm FERROELECTRIC SHIELDING OF AN ELONGATED CAVITY BY POLARIZATION ROTATION
Kamlah M., Kessler H., Balke H. (Germany)
- 03,00 pm A REVIEW OF FINITE ELEMENT TECHNIQUES TO ANALYSE 3D PIEZOELECTIC CRACK PROBLEMS
Kuna M. (Germany)
- 03,20 pm ENERGETICALLY CONSISTENT BOUNDARY CONDITIONS FOR ELECTROMECHANICAL FRACTURE
Landis C.M. (USA)

02,00-03,40 pm

Catania Room

Topic 31 (NDE): NONDESTRUCTIVE EXAMINATION & MONITORING CS 1

Chairman: Tschegg E.K. (Austria)

- 02,00 pm DETERMINATION OF CRACK TIP OPENING DISPLACEMENT OF CONCRETE BY EMBEDDED FIBER OPTIC SENSOR
Zhang Z., Ansari F. (USA)
- 02,20 pm ON-PROCESS MONITORING OF CERAMICS AND CERAMIC COATINGS BY LASER AE
Enoki M., Nishinoiri S. (Japan)
- 02,40 pm APPLICATION OF POTENTIAL DROP TECHNIQUE TO THE INSPECTION OF WELDED BOILER HIGH TEMPERATURE AND PRESSURE PARTS
Kuroiwa T., Hamada S., Ogawa Y., Iida H., Kuroki M., Hayakawa M. (Japan)
- 03,00 pm PRESSURE ASSESSMENT OF CRACK DEFECTS EMPLOYING ULTRASOUND IN-LINE INSPECTION
Lamontagne M. (Canada), Reber K. (Germany), Uzelac N. (Canada)
- 03,20 pm ON SITE EVALUATION OF THE ELASTIC MODULUS OF CONCRETE
Antonaci P., Bocca P. (Italy)

Bologna Room

Topic 36 (POLYM): POLYMERS CS 1

Chairman: Williams G. (UK)

- 02,00 pm CAVITATION AND FRACTURE OF SOFT ADHESIVES
Creton C., Chiche A., Dollhofer J., Roos A. (France), Hui C.Y., Muralidharan V. (USA)
- 02,20 pm ASSESSMENT OF METHODS TO DETERMINE FRACTURE TOUGHNESS OF POLYMERS IN THE DUCTILE-TO-BRITTLE TRANSITION REGION
Cocco R.G., Frontini P.M., Perez-Ipiña J.E. (Argentina)
- 02,40 pm PREDICTING THE LONG-TERM FAILURE OF POLYCARBONATE: A CONSTITUTIVE APPROACH
Klompfen E.T.J., Engels T.A.P., Janssen R.P.M., Govaert L.E., Meijer H.E.H. (The Netherlands)
- 03,00 pm FRACTURE BEHAVIOUR OF DUCTILE POLYMER UNDER MIXED MODE LOADING
Kuriyama T., Narisawa I. (Japan)
- 03,20 pm CRACK PROPAGATION KINETICS OF POLYMERS AT QUASISTATIC AND MODERATE IMPACT LOADING
Lach R. (Germany), Seidler S. (Austria), Grellmann W. (Germany)

Thursday, March 24

04,10-05,50 pm

04,10-05,50 pm

Londra Room

Topic 09 (DAMAG): DAMAGE MECHANICS

MS 1 - 11: Damage Mechanics

Chairman: Chaboche J.-L. (France)

- 04,10 pm AN 'EXTENDED' ANISOTROPIC DAMAGE MODEL BASED ON YOUNG/POISSON DECOMPOSITION
Carol I. (Spain), Rizzi E. (Italy), Willam K. (USA)
- 04,30 pm MODELLING OF ANISOTROPIC DAMAGE BY MICROCRACKS: TOWARDS A DISCRETE APPROACH WITHIN A STANDARD FRAMEWORK
Bargellini R., Halm D., Dragon A. (France)
- 04,50 pm ON COUPLING ANISOTROPIC DAMAGE AND INTERNAL FRICTION IN MODELING BRITTLE MATERIALS
Gambarotta L., Monetto I. (Italy)
- 05,10 pm A CONSISTENT DESCRIPTION OF THE UNILATERAL EFFECT OF ORTHOTROPIC DAMAGE ON ELASTIC PROPERTIES
Pensée V., He Q.-C. (France), Lu Y.-F. (China)
- 05,30 pm A MICROMECHANICS INSPIRED DAMAGE MODEL FOR INITIALLY TRANSVERSELY ISOTROPIC MATERIALS
Kondo D., Gruescu C. (France), Cazacu O. (USA)

Berlino Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 11: Physics and Scaling in Fracture

Chairman: Landis E. (USA)

- 04,10 pm FRACTURE IN MULTIPHASE PARTICULATE MATERIALS: LATTICE MODELING ISSUES
Bolander J.E., Yip M. (USA)
- 04,30 pm SHEAR LOCALIZATION AND PERCOLATION OF STABLE STRUCTURE IN AMORPHOUS SOLIDS
Shi Y., Falk M.L. (USA)
- 04,50 pm INFLUENCE OF THE MATERIAL MESO-STRUCTURE ON 2D AND 3D LATTICE RESPONSE
Lilliu G. (The Netherlands), van Mier J.G.M. (Switzerland)
- 05,10 pm INFLUENCE OF MICROCRACKING ON DUCTILITY OF MULTI-PHASE MATERIALS
Schlengen E. (The Netherlands)
- 05,30 pm SOLUTIONS FOR NONLINEAR LATTICES
Slepyan L.I. (Israel)

04,10-05,50 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

SS 1 - 3: Micro- or Meso-Scale

Chairman: Fomin V.M. (Russia)

- 04,10 pm NUMERICAL INVESTIGATION OF COAL FRACTURE AND DUST PARTICLE FORMATION IN MINING
Smolin I.Y., Makarov P.V., Stefanov Y.P., Kuznetzov P.V., Trubitsyn A.A., Trubitsyna N.V., Voroshilov S.P. (Russia)
- 04,30 pm HIGH RATE LOADING OF MATERIALS AND STRUCTURES SIMULATION ON THE BASE OF MOVABLE CELLULAR AUTOMATON METHOD
Huan D. (China), Chertov M.A., Smolin A.Yu., Psakhie S.G. (Russia)
- 04,50 pm NUMERICAL SIMULATION OF FRACTURE IN ROCKS
Stefanov Y.P., Evseev V.D. (Russia)
- 05,10 pm COMPUTER-AIDED SIMULATION OF MATERIAL LOCAL FRACTURE EFFECTS AT THE AREA OF TRIBOLOGICAL CONTACTS ON THE BASE OF METHODS OF DISCRETE APPROACH
Kloss H., Santner E. (Germany), Dmitriev A.I., Shilko E.V. (Russia)
- 05,30 pm SIMULATION OF DEFORMATION BEHAVIOR OF POLYMERIC MATERIALS BY CHAIN NETWORK MODEL
Shinozaki A., Kishimoto K., Inoue H. (Japan)

Parigi Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 11: Computational Fracture Mechanics

Chairman: Talreja R. (USA)

- 04,10 pm MATERIAL POINT METHOD CALCULATIONS WITH EXPLICIT CRACKS, FRACTURE PARAMETERS, AND CRACK PROPAGATION
Nairn J.A., Guo Y.J. (USA)
- 04,30 pm THE EFFECTS OF LATTICE ORIENTATION AND PROXIMITY TO A GRAIN BOUNDARY ON MICROSTRUCTURALLY SHORT CRACKS IN 316L STEEL
Simonovski I. (The Netherlands, Slovenia), Nilsson K.-F. (The Netherlands), Kovač M., Cizelj L. (Slovenia)
- 04,50 pm FORMULATION OF A BONDED-PARTICLE MODEL TO SIMULATE STRESS CORROSION IN ROCK
Potyondy D.O. (Canada)
- 05,10 pm CRACK PROPAGATION MECHANISM IN ROUNDED COHESIVE GRANULAR MEDIA
Preechawuttipong I., Ingsuwan P. (Thailand), Peyroux R. (France), Jacque S. (Thailand)
- 05,30 pm CONTRIBUTIONS TO THE SMEARED CRACK METHOD: NEW CRACK LOCAL BEHAVIOR APPLIED TO A MULTI-CRACKS F.E. MODEL
Mounajed G., Ung Quoc H., Boussa H. (France)

04,10-05,50 pm

Roma Room

Topic 06 (COMPU): COMPUTATIONAL MECHANIC

MS 2 - 1: Computational and Experimental Methods for Damage, Fracture and Deformation of Solids and Structures: Recent Advances

Chairman: Yagawa G. (Japan)

- 04,10 pm SPACE-TIME FINITE ELEMENT TECHNIQUES FOR COMPUTATION OF FLUID-STRUCTURE INTERACTIONS
Tezduyar T.E., Sathe S., Keedy R., Stein K. (USA)
- 04,30 pm EQUIVALENT MATERIAL MODELING FOR COMPOSITE OF DAMAGED INCLUSIONS WITH SPRING LAYER
Nakagaki M., Matsumoto R., Nakamichi Y. (Japan)
- 04,50 pm FRACTURE ANALYSIS OF COMPOSITE LAMINATE WITH DELAMINATION USING X-FEM
Nagashima T., Suemasu H. (Japan)
- 05,10 pm EXPERIMENTAL AND NUMERICAL ASSESSMENT OF DAMAGE IN ROLLING CONTACT FATIGUE
Donzella G., Mazzù A. (Italy)
- 05,30 pm ON THREE-DIMENSIONAL VIRTUAL CRACK CLOSURE-INTEGRAL METHOD (VCCM) FOR ARBITRARY SHAPED HEXAHEDRON FINITE ELEMENTS
Okada H., Higashi M., Kikuchi M., Fukui Y., Kumazawa N. (Japan)

Lisbona Room

Topic 16 (FATIG): FATIGUE

CS 3

Chairman: Pippan R. (Austria)

- 04,10 pm THERMOMECHANICAL CRACK INITIATION AND EARLY GROWTH IN 1CrMoV NOTCHED SPECIMENS
Mazza E., Colombo F. (Switzerland), Holdsworth S.R., Skelton R.P. (UK)
- 04,30 pm EFFECT OF SIZE OF COATING DEFECT ON FATIGUE PROPERTIES OF STEEL THERMALLY SPRAYED WITH NI-BASED SELF-FLUXING ALLOY
Nishimori H., Akebono H., Komotori J., Shimizu M. (Japan)
- 04,50 pm FATIGUE CHARACTERIZATION OF AUTOMOTIVE STEEL SHEETS
Maggi S., Scavino G. (Italy)
- 05,10 pm FATIGUE CRACK PROPAGATION CHARACTERISTICS OF WELDED JOINTS IN A 444 STAINLESS STEEL
Akita M., Nakajima M., Tokaji K., Shimizu T. (Japan)
- 05,30 pm ENVIRONMENTAL EFFECTS ON THE FATIGUE BEHAVIOR OF AN AUSTENITIC STAINLESS STEEL
Lin C.-K., Lan I.-L. (Taiwan)

04,10-05,50 pm

Atene Room

Topic 16 (FATIG): FATIGUE

CS 4

Chairman: Begley M.R. (USA)

- 04,10 pm CRACK PROPAGATION RATE DEPENDING ON STRUCTURE OF MODELING COMPOSITE MATERIALS
Ishihara T. (Japan), Ishihara H. (USA)
- 04,30 pm CORRELATION BETWEEN FRACTURE BEHAVIOUR AND DUCTILITY OF THE CELL STRUT MATERIAL IN CASE OF METALLIC FOAMS
Ohrndorf A., Krupp U., Christ H.-J. (Germany)
- 04,50 pm FATIGUE PERFORMANCE OF SANDWICH COMPOSITES
Shafiq B., Quispitupa A., Just F. (USA)
- 05,10 pm ACCELERATED FATIGUE PROPERTIES OF SINGLE-FIBER COMPOSITES
Chen S.S., Hwang S.-F. (Taiwan)
- 05,30 pm FATIGUE CRACK GROWTH PREDICTION IN 7475-T7351 ALUMINIUM ALLOY UNDER RANDOM LOADING USING MODIFIED RMS MODEL
Tadjiev D.R., Kim S.T. (South Korea)

Dublino Room

Topic 39 (RELIA): RELIABILITY

SS 1 - 1: Statistical Methods in Fracture and Fatigue

Chairman: Schueller G.I. (Austria)

- 04,10 pm FRACTURE STATISTICS OF CERAMICS – A SHORT OVERVIEW
Danzer R., Lube T., Supancic P. (Austria)
- 04,30 pm UNCERTAINTY ANALYSIS OF FAILURE PROBABILITY PREDICTIONS FOR BRITTLE FRACTURE
Riesch-Oppermann H., Roudi S., Erbacher T. (Germany)
- 04,50 pm PROBABILISTIC ANALYSIS OF THE FRACTURE TOUGHNESS, K_{Ic} , OF BRITTLE AND DUCTILE MATERIALS DETERMINED BY SIMPLIFIED METHODS USING THE WEIBULL DISTRIBUTION FUNCTION
Diaz G., Kittl P. (Chile)
- 05,10 pm EFFECTIVE STRESS INTENSITY FACTORS IN MATERIALS WITH MICRODEFECTS AND MICROINCLUSIONS
Romalis N.B. (USA)
- 05,30 pm STATISTICAL ASPECTS OF SOME FATIGUE CRACK GROWTH DATA
Wu W.F., Ni C.C. (Taiwan)

04,10-05,50 pm

Copenhagen Room

Topic 26 (MEMS): MEMS

SS 1 - 2: Fracture and Fatigue at the Micro and Nano Scales

Chairman: Espinosa H.D. (USA)

- 04,10 pm A COMPARISON OF MECHANICAL PROPERTIES OF THREE MEMS MATERIALS - SILICON CARBIDE, ULTRANANOCRYSTALLINE DIAMOND, AND HYDROGEN-FREE TETRAHEDRAL AMORPHOUS CARBON (Ta-C)
Espinosa H.D., Peng B., Moldovan N., Friedmann T.A., Xiao X., Mancini D.C., Auciello O., Carlisle J., Zorman C.A. (USA)
- 04,30 pm FRACTURE OF CSL BOUNDARIES IN CU AND AL
Speartot D.E., Jacob K.I., McDowell D.L. (USA)
- 04,50 pm FATIGUE DAMAGE ACCUMULATION AND MITIGATION IN SILICON STRUCTURAL FILMS
Muhlstein C.L. (USA)
- 05,10 pm CRACK INITIATION IN ULTRA THIN PATTERNED FILMS
Sottos N.R., Kandula S., Geubelle P.H. (USA)
- 05,30 pm OPERATIONAL WEAR AND FRICTION IN MEMS DEVICES
Subhash G., Corwin A.D., De Boer M.P. (USA)

Firenze Room

Topic 27 (MET): METALLIC MATERIALS

CS 7

Chairman: Tanaka Y. (Japan)

- 04,10 pm LINKING MICROSTRUCTURE AND HIGH TEMPERATURE DUCTILITY IN ALUMINIUM ALLOYS 6XXX
Lassance D., Schmitz M., Delannay F., Pardoën T. (Belgium)
- 04,30 pm FERRITIC AND AUSTENITIC SINTERED STAINLESS STEELS FATIGUE CRACK PROPAGATION RESISTANCE: HYDROGEN EMBRITTLEMENT INFLUENCE
Iacoviello F., Di Cocco V. (Italy)
- 04,50 pm INFLUENCE OF TEMPERED MARTENSITE CONTENT ON THE FATIGUE CRACK PROPAGATION IN A STRUCTURAL STEEL
Carneiro M.A., Pereira M.V., Darwish F.A., Motta S.H. (Brazil)
- 05,10 pm STRESS INTENSITY FACTORS FOR COMBINED TEMPERATURE GRADIENT AND INTERNAL PRESSURE FOR DAMAGED CYLINDERS
de Carvalho E.A. (Brazil)
- 05,30 pm DESTABILIZATION OF RETAINED AUSTENITE DURING MULTIPLE TEMPERING OF HIGH-SPEED W-Mo-V STEEL
Andjelic B., Sijacki Zeravcic V., Djukic M., Bakic G. (Serbia and Montenegro)

04,10-05,50 pm

Venezia Room

Topic 38 (RC): REINFORCED CONCRETE

SS 1 - 1: Reinforced Concrete

Chairman: Plizzari G. (Italy)

- 04,10 pm A NLFM METHOD FOR THE PREDICTION OF SLABS ON GRADE BEHAVIOUR
Belletti B., Bernardi P., Meda A., Plizzari G. (Italy)
- 04,30 pm SEQUENTIALLY LINEAR SAW-TOOTH MODELLING OF REINFORCED STRUCTURES
Rots J.G. (The Netherlands), Invernizzi S. (Italy)
- 04,50 pm NEW RC PANEL ELEMENT WITH BOND-SLIP EFFECT
Lin X., Irawan P. (Singapore)
- 05,10 pm CYCLIC BEHAVIOR OF FRP-WRAPPED COLUMNS UNDER AXIAL AND FLEXURAL LOADINGS
Ferracuti B., Savoia M. (Italy)
- 05,30 pm ON THE DESIGN OF STEEL FIBER REINFORCED CONCRETE TUNNEL LINING SEGMENTS
Sorelli L. (Italy), Toutlemonde F. (France)

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTELEMENT

MS 1 - 4: Environmental Degradation of Materials: Hydrogen Embrittlement

Chairman: Schwarz R.B. (USA)

- 04,10 pm H-INDUCED DECOHESION ACROSS THE GRAIN BOUNDARY AND H-ENHANCED VACANCY ACTIVITY IN METALS
Geng W.T. (USA, Japan), Freeman A.J., Olson G.B. (USA), Tatejama Y., Ohno T. (Japan)
- 04,30 pm EXPLORING THE ROLE OF SUPERABUNDANT VACANCIES ON H RELATED FRACTURE: BULK SIMULATIONS
Tanguy D., Delafosse D., Mareschal M. (France)
- 04,50 pm COMPUTER SIMULATION OF HYDROGEN-AFFECTED DISLOCATION MOVEMENT
Wen M., Fukuyama S., Yokogawa K. (Japan)
- 05,10 pm ELASTIC CONSTANTS OF A Pd-H CRYSTAL WITH COHERENT INTERPHASES
Schwarz R.B., Tuggle D., Bach H. (USA)
- 05,30 pm HYDROGEN EMBRITTELEMENT IN HYDRIDE- AND NON HYDRIDE-FORMING SYSTEMS – MICROSTRUCTURAL/PHASE CHANGES AND CRACKING MECHANISMS
Eliezer D., Tal-Gutelmacher E. (Israel), Boellinghaus T. (Germany)

04,10-05,50 pm

Napoli Room

Topic 29 (MIXED): Mixed Mode

MS 1 - 2: Mixed Mode Crack Growth

Chairman: Nied H. (USA)

- 04,10 pm A CRITICAL SHEAR STRAIN CRITERION FOR THE DUCTILE –BRITTLE TRANSITION IN HY100 STEEL UNDER MIXED MODE I & II LOADING
Bhattacharjee D. (India), Knott J.F. (UK)
- 04,30 pm MIXED MODE FRACTURE IN CONCRETE AND MASONRY
Alfaiate J. (Portugal), Sluys L.J. (The Netherlands), Pires E.B. (Portugal)
- 04,50 pm TRACKING OF CRACK SURFACES FOR THREE-DIMENSIONAL SDA MODELS
Feist C., Hofstetter G. (Austria)
- 05,10 pm INTERFACE MIXED MODE MODEL
Walter R., Olesen J.F., Stang H. (Denmark)
- 05,30 pm ANALYSIS OF INTERIOR STRESS FIELD OF THE SPECIMEN UNDER MIXED-MODE LOADING BY THREE-DIMENSIONAL LOCAL MODEL HYBRID METHOD
Machida K. (Japan)

Genova Room

Topic 41 (SMART): SMART MATERIALS & STRUCTURES

SS 1 - 2: Electromagnetic Fracture Mechanics of Smart Materials & Structures

Chairman: Shindo Y. (Japan)

- 04,10 pm FRACTURE MECHANICS FOR ELECTROACTIVE MATERIALS
McMeeking R.M. (USA)
- 04,30 pm ON THE FRACTURE TOUGHNESS OF FERROELECTRIC CERAMICS WITH ELECTRIC FIELD APPLIED PARALLEL TO THE CRACK FRONT
Wang J., Landis C.M. (USA)
- 04,50 pm EXPERIMENTAL AND NUMERICAL INVESTIGATIONS ON RESONANT CHARACTERISTICS OF A SINGLE-LAYER PIEZOCERAMIC PLATE AND A CROSS-PLY PIEZOLAMINATED COMPOSITE PLATE
Ma C.-C., Lin H.-Y., Lin Y.-C., Huang Y.-H. (China)
- 05,10 pm SIMPLIFIED CRACK INITIATION ANALYSIS OF PIEZOELECTRIC CERAMICS UNDER CYCLIC LOADING
Mizuno M., Shimomura T. (Japan)
- 05,30 pm APPLICATION OF PATH-INDEPENDENT INTEGRAL ANALYSIS TO FRACTURE OF MAGNETO-ELECTROELASTIC SOLIDS
Tian W.Y., Rajapakse R.K.N.D. (Canada)

04,10-05,50 pm

Catania Room

Topic 21 (HIST): HISTORICAL AND MONUMENTAL BUILDINGS

SS 1 - 1: Damage and Long-Term Behaviour of Historic Buildings

Chairlady: Binda L. (Italy)

- 04,10 pm LONG TERM DAMAGE OF HISTORIC MASONRY STRUCTURES
Binda L., Saisi A. (Italy)
- 04,30 pm LONG-TERM DAMAGE ON MASONRY TOWERS CASE STUDIES AND INTERVENTION STRATEGIES
Valluzzi M.R., Casarin F., Garbin E., da Porto F., Modena C. (Italy)
- 04,50 pm A NUMERICAL MODEL FOR MULTI-LEAF STONE MASONRY
Ramalho M. (Brazil), Papa E., Taliercio A., Binda L. (Italy)
- 05,10 pm PRE-EXISTING DAMAGES AND CHRONOLOGICAL TIME STEP ANALYSES OF HISTORICAL MASONRY BUILDINGS
Calderini C., Lagomarsino S. (Italy)
- 05,30 pm MODELLING OF MASONRY CREEP AND DAMAGE
Pina-Henriques J., Lourenço P.B., Krakowiak K.J. (Portugal)

Bologna Room

Topic 36 (POLYM): POLYMERS

CS 2

Chairman: Pavan A. (Italy)

- 04,10 pm FRACTURE OF RUBBER-TOUGHENED POLY (METHYL METHACRYLATE): MEASUREMENT AND STUDY OF COHESIVE ZONE PARAMETERS
Andena L., Rink M. (Italy)
- 04,30 pm RATE DEPENDENT FRACTURE OF POLYMERS – APPLICABILITY AND LIMITATIONS OF FORCE BASED FRACTURE MECHANICS APPROACHES
Major Z., Lang R.W. (Austria)
- 04,50 pm EVALUATION OF FRACTURE TOUGHNESS BY EWF METHOD FOR THIN-WALL MOLDINGS
Kenmochi S., Mizoguchi M., Kita H., Kuriyama T. (Japan)
- 05,10 pm STRAIN RATE DEPENDENCE OF THE ANISOTROPIC FRACTURE TOUGHNESS OF RUBBER MODIFIED POLYPROPYLENE FILMS
Pandini S., Pegoretti A. (Italy)
- 05,30 pm NUMERICAL SIMULATION OF CRAZE INITIATION AND GROWTH IN GLASSY POLYMERS
Wang T.J., Wang J.G. (China)

Friday, March 25

10,30 am-12,10 pm

10,30 am-12,10 pm

500's Room

Topic 34 (PHYS): PHYSICAL ASPECTS

MS 1 - 12: Physics and Scaling in Fracture

Chairman: Kun F. (Hungary)

- 10,30 am MICRO-MACRO SCALING IN DISORDERED MATERIALS
van Mier J.G.M. (Switzerland)
- 11,10 am TWO-DIMENSIONAL AND THREE-DIMENSIONAL FRACTURES IN A
FACE CENTERED CUBIC ALLOY
Morel S., Olive J.-M. (France)
- 11,30 am OSCILLATING FRACTURE PATHS IN THIN BRITTLE SHEETS: WHEN
GEOMETRY RULES CRACK PROPAGATION
Audoly B. (France), Reis P.M. (UK), Roman B. (France)
- 11,50 am STUDY ON THE FRAGMENTATION OF SHELLS
*Wittel F. K. (Germany), Kun F. (Hungary), Kröplin B.H.,
Herrmann H.J. (Germany)*

Londra Room

Topic 03 (BIO): BIOMECHANICS

SS 1 - 1: Fracture of Biomaterials and Tissues

Chairman: Soboyejo W. (USA)

- 10,30 am BREAKING BONES: THE EFFECT OF MICRODAMAGE ON THE FATIGUE
BEHAVIOUR OF COMPACT BONE
O'Brien F.J., Taylor D., Lee T.C. (Ireland)
- 11,10 am THE EFFECT OF R-RATIO ON THE FATIGUE CRACK PROPAGATION
RESISTANCE OF HUMAN CORTICAL BONE
*Akhavan S. (USA), Kayacan R. (Turkey), Varadarajan R., Penoyar T.,
Davy D., Rimnac C. (USA)*
- 11,30 am VISUALISATION AND QUANTIFICATION OF FATIGUE INDUCED
MICRODAMAGE IN BONE: HISTOLOGY AND RADIOLOGY
Lee C., O'Brien F.J., Taylor D., Parkesh R., Gunnlaugsson T. (Ireland)
- 11,50 am FAILURE OF EQUINE COMPACT BONE UNDER IMPACT LOADING
Shazly M. (USA), Kayacan R. (Turkey), Prakash V., Rimnac C., Davy D. (USA)

10,30 am-12,10 pm

Berlino Room

Topic 37 (RAIL): Railways

SS 1 - 1: Structural Integrity of Transportation Systems

Chairman: *Pluvinage G. (France)*

- 10,30 am APPLICATION OF FRACTURE MECHANICS TO RAILWAY COMPONENTS – AN OVERVIEW
Zerbst U. (Germany)
- 10,50 am RAIL LIFE PREDICTION FOR TRAMCARS UNDER FULL SLIP REGIME
Desimone H., Beretta S. (Italy), Kapoor A. (UK)
- 11,10 am EXPERIMENTAL INVESTIGATION ON COMPETITION BETWEEN WEAR AND RCF IN A RAIL STEEL
Donzella G., Faccoli M., Mazzù A., Roberti R. (Italy)
- 11,30 am RAIL-WHEEL CONTACT RESEARCH AT THE UNIVERSITY OF NEWCASTLE
Kapoor A., Fletcher D.I., Franklin F.J., Vasic G., Smith L. (UK)
- 11,50 am A MODIFIED RELAXATION-MODEL FOR THE PREDICTION OF RESIDUAL STRESSES IN TWO-DIMENSIONAL ROLLING/SLIDING CONTACT
Foletti S., Desimone H. (Italy)

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE

CS 1

Chairman: *Psakhie S.G. (Russia)*

- 10,30 am FRACTURE PROCESS VOLUME: MECHANICAL-AND-PHYSICAL VIEWPOINT
Kotrechko S. (Ukraine)
- 10,50 am STEADY-STATE MODEL OF DELAYED HYDRIDE CRACKING IN ZIRCONIUM ALLOYS
Matvienko Y.G., Shmakov A.A. (Russia)
- 11,10 am STRESS DISTRIBUTION AND CRACK OPENING IN THE PREFRACTURE ZONE (NEUBER-NOVOZHILOV APPROACH)
Kornev V.M. (Russia)
- 11,30 am COSSERAT CONTINUUM MODEL OF WAVE PROPAGATION IN LAYERED MATERIALS
Pasternak E., Mühlhaus H.-B. (Australia)
- 11,50 am EXPERIMENTAL INVESTIGATION OF COAL FRACTURE SURFACE AT THE MESOSCALE
Kuznetsov P.V., Makarov P.V., Petrakova I.V., Smolin I.Y., Stefanov Y.P., Trubitsyn A.A., Trubitsyna N.V., Voroshilov S.P. (Russia)

10,30 am-12,10 pm

Parigi Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 1 - 12: Computational Fracture Mechanics

Chairman: Pichler B. (Austria)

- 10,30 am BOUNDARY INTEGRAL FRACTURE ANALYSIS AND HYPERSINGULAR EVALUATION
Salvadori A. (Italy), Phan A.-V., Gray L. J. (USA)
- 10,50 am MODELLING CRACK EXTENSION IN BIAXIALLY LOADED PANELS
Scheider I., Schödel I.M., Schönfeld W., Brocks W. (Germany)
- 11,10 am CRACKING IN PLAIN CONCRETE: A MULTIFIELD APPROACH
Schrefler B.A., Secchi S., Simoni L. (Italy)
- 11,30 am APPLICATION OF HYBRID CELLULAR AUTOMATON APPROACH FOR COMPUTER-AIDED EXAMINATION AND FORECAST OF STRENGTH PROPERTIES OF HETEROGENEOUS COAL BEDS
Zavšek S., Pezdič J. (Slovenia), Shilko E.V., Dmitriev A.I., Dimaki A.V. (Russia)
- 11,50 am COMPUTATION OF DYNAMIC STRESS INTENSITY FACTORS IN FGMS BY AN ADVANCED LBIEM
Sladek J., Sladek V. (Slovakia), Zhang C. (Germany)

Roma Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 2 - 2: Computational and Experimental Methods for Damage, Fracture and Deformation of Solids and Structures: Recent Advances

Chairman: Silberschmidt V.V. (UK)

- 10,30 am MODELLING OF DUCTILE ANISOTROPIC CONTINUUM DAMAGE: EXPERIMENTS AND NUMERICAL ANALYSES
Brünig M. (Germany)
- 10,50 am PHYSICAL MEANING OF THE FICTITIOUS CRACK OPENING DISPLACEMENT IN DUGDALE MODEL
Toyosada M., Gotoh K. (Japan)
- 11,10 am A MIXED APPROACH TO COHESIVE CRACK PROPAGATION
Cinquini C., Bruggi M., Venini P. (Italy)
- 11,30 am ESTIMATION OF STRENGTH FOR THREE-DIMENSIONAL BONDED STRUCTURES CONSIDERING STRESS SINGULARITY
Koguchi H., Satoh M. (Japan)

10,30 am-12,10 pm

Lisbona Room

Topic 16 (FATIG): FATIGUE CS 5

Chairman: McEvily A.J. (USA)

- 10,30 am INFLUENCE OF THE MICROSTRUCTURE ON THE CRACK PROPAGATION: IN SITU INVESTIGATION IN THE SCANNING ELECTRON MICROSCOPE
Marx M., Vehoff H. (Germany)
- 10,50 am THE INFLUENCE OF PRE-AGING, TEMPERATURE, MEAN AND LOCAL STRAIN ON LOW CYCLE AND THERMO-MECHANICAL FATIGUE
Riedler M., Minichmayr R., Eichlseder W. (Austria)
- 11,10 am SHORT CRACK PROPAGATION IN DUPLEX STEEL – MODELLING AND EXPERIMENTAL VERIFICATION
Künkler B., Düber O., Krupp U., Fritzen C.-P., Christ H.-J. (Germany)
- 11,30 am CHARACTERIZATION OF FATIGUE CRACK INITIATION CONDITION OF STEELS WITH AFM
Nakai Y., Kishimoto M., Hosomi S. (Japan)
- 11,50 am ROLE OF MICROSTRUCTURE ON SHORT CRACK PROPAGATION AND ITS THRESHOLD
Narasaiah N., Ray K.K. (India)

Atene Room

Topic 16 (FATIG): FATIGUE CS 6

Chairman: Darwish F.A. (Brazil)

- 10,30 am FATIGUE OF BRIDGING CERAMICS: UNDERSTANDING CRACK SIZE EFFECTS
Kruzic J.J., Cannon R.M., Ritchie R.O. (USA)
- 10,50 am THE EFFECT OF CYCLIC BENDING STRAINS ON THE BEHAVIOR OF SUPERELASTIC NICKEL-TITANIUM WIRES AND ENDODONTIC INSTRUMENTS
Bahia M.G.A., Dias R.F., Buono V.T.L. (Brazil)
- 11,10 am FATIGUE BEHAVIOR OF NICKEL-TITANIUM SUPERELASTIC WIRES AND ENDODONTIC INSTRUMENTS
Bahia M.G.A., Buono V.T.L. (Brazil)
- 11,30 am THE EFFECT OF TEMPERATURE AND ENVIRONMENT ON THE FATIGUE BEHAVIOUR OF A THIRD GENERATION γ -TiAl ALLOY
Bauer V. (Germany), Cui W. (China), Christ H.-J. (Germany)
- 11,50 am NUMERICAL VALIDATION OF THE SIZE ESTIMATES APPROACH FOR ELECTRICAL CONDUCTORS
Bilotta A., Formica G., Morassi A., Rosset E., Turco E. (Italy)

10,30 am-12,10 pm

Dublino Room

Topic 39 (RELIA): RELIABILITY

SS 1 - 2: Statistical Methods in Fracture and Fatigue

Chairman: Sarkani S. (USA)

- 10,30 am A STUDY ON THE RELIABILITY OF CABLE APPLYING TO FRONT STEERING SYSTEM
Kimura Y., Suyama K., Shimizu Y. (Japan)
- 10,50 am PROBABILISTIC PROPERTY PREDICTION
Harlow D.G. (USA)
- 11,10 am A PROBABILISTIC APPROACH TO FATIGUE RISK ASSESSMENT IN AEROSPACE COMPONENTS
Cavallini G., Lazzeri R. (Italy)
- 11,30 am A PROBABILISTIC MODEL TO SIMULATE THE ORIGIN AND INCEPTION OF FATIGUE FAILURE IN METALS
Guralnick S.A., Mohammadi J. (USA)
- 11,50 am MODELING RUNNING FRACTURE IN PIPELINES – PAST, PRESENT, AND PLAUSIBLE FUTURE DIRECTIONS
Leis B.N., Zhu X.-K., Forte T.P., Clark E.B. (USA)

Copenhagen Room

Topic 26 (MEMS): MEMS

SS 2 - 1: MEMS

Chairman: Michel B. (Germany)

- 10,30 am MECHANICAL PROPERTIES OF MEMS STRUCTURES
Dual J., Simons G. (Switzerland), Villain J., Weippert C. (Germany)
- 10,50 am THERMAL LAP SHEAR TESTS ON MEMS INTERCONNECTED SOLDER JOINTS
Vogel J., Dudek R., Faust W., Dost M., Michel B. (Germany)
- 11,10 am FRACTURE STRENGTH OF THIN FILMS STUDIED BY INDENTATION TESTING
Yonezu A., Ogawa T., Takemoto M. (Japan)
- 11,30 am FRACTURE AND FATIGUE BEHAVIOUR OF MEMS RELATED MICRO MATERIALS
Walter H., Dudek R., Michel B. (Germany)
- 11,50 am A COMBINED SIMULATIVE AND EXPERIMENTAL APPROACH TO RELIABILITY OPTIMIZATION OF MEMS
Wittler O., Keller J., Vogel D., Michel B. (Germany)

10,30 am-12,10 pm

Firenze Room

Topic 33 (OIL): OIL & GAS PRODUCTION AND DISTRIBUTION

SS 1 - 1: Oil & Gas Production and Distribution

Chairman: Salvini P. (Italy)

- 10,30 am MODELLING OF CRACK ARRESTORS ON GAS-PIPELINES
*Fonzo A., Salvini P., Mannucci G., Demofonti G., Di Biagio M. (Italy),
Edwards A. (UK)*
- 10,50 am NEAR-TIP ASYMPTOTIC ANALYSIS OF A PKN FLUID-DRIVEN FRACTURE
WITH NON-LOCAL ELASTICITY EQUATION
Adachi J.I. (USA), Peirce A.P. (Canada)
- 11,10 am THE EFFECT OF PRE-STRAIN ON THE FRACTURE TOUGHNESS OF LINE
PIPE STEEL
Cosham A., Hopkins P., Palmer A. (UK)
- 11,30 am A MICROMECHANICS METHODOLOGY FOR DEFECT ASSESSMENTS
IN PIPELINES
Dotta F., Ruggieri C. (Brazil)
- 11,50 am SIGNIFICANCE OF DWT TESTING FOR LINE PIPE SAFETY
*Erdelen-Peppler M., Gehrman R., Junker G., Knauf G.,
Liessem A. (Germany)*

Venezia Room

Topic 38 (RC): REINFORCED CONCRETE

SS 1 - 2: Reinforced Concrete

Chairman: Ventura G. (Italy)

- 10,30 am PREDICTION OF RELIABILITY FOR CORROSIVE RC MEMBER USING
INTELLIGENT HYBRID SYSTEM
Wu H.-C. (China)
- 10,50 am SHEAR CAPABILITY OF REINFORCED CONCRETE BEAMS WITHOUT
STIRRUPS PREDICTED USING A FRACTURE MECHANICAL APPROACH
Xu S. (China), Reinhardt H.W. (Germany), Zhang X. (China)
- 11,10 am HYSTERETIC FLEXURAL BEHAVIOUR OF A REINFORCED CONCRETE
BEAM WITH A T CROSS-SECTION
Carpinteri An., Spagnoli A., Vantadori S. (Italy)
- 11,30 am FRACTURE MECHANISM AND ACOUSTIC DAMAGE ANALYSIS OF THIN
MATERIALS
Mfoumou E.M, Kao-Walter F., Hedberg C. (Sweden)
- 11,50 am DOES ELASTIC REBOUND THEORY APPLY TO SEISMIC FAULTS?
Ziv A. (Israel), Cochard A. (Germany), Schmittbuhl J. (France)

10,30 am-12,10 pm

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT
MS 1 - 5: Environmental Degradation of Materials:
Hydrogen Embrittlement
Chairman: Sofronis P. (USA)

- 10,30 am HYDROGEN DECREASED DUCTILITY OF A U-6%NB ALLOY
Teter D.F., Hackenberg R.E., Mauro M.E., McCabe R., Dickerson P.O. (USA)
- 10,50 am HYDROGEN EMBRITTLEMENT OF STAINLESS STEELS
Robinson S.L., Somerday B.P., Moody N.R. (USA)
- 11,10 am MECHANICS MODELS FOR HYDROGEN EMBRITTLEMENT
MECHANISMS
Liang Y., Sofronis P., Dodds R.H. Jr. (Usa), Aravas N. (Greece)
- 11,30 am DEFORMATION BEHAVIOR IN MATERIALS SUSCEPTIBLE TO
HYDROGEN EMBRITTLEMENT
Nibur K.A., Bahr D.F., Somerday B.P. (USA)
- 11,50 am A COUPLED DISLOCATION-HYDROGEN BASED MODEL OF INELASTIC
DEFORMATION
Bammann D. J., Sofronis P. (USA)

Napoli Room

Topic 29 (MIXED): Mixed Mode
MS 1 - 3: Mixed Mode Crack Growth
Chairman: Gosz M. (USA)

- 10,30 am TEARING ENERGY OF TIRE RUBBER UNDER MODE-I AND MODE-III
LOADING
Gdoutos E.E. (Greece), Schubel P.M., Daniel I.M. (USA)
- 10,50 am INFLUENCE OF THE LOADING RATE ON THE CONCRETE CONE FAILURE
Ožbolt J. (Germany)
- 11,10 am ON THE PRESENCE OF T-STRESS IN MODE II CRACK PROBLEMS
Ayatollahi M.R., Zakeri M., Hassani M.M. (Iran)
- 11,30 am FRACTURE MECHANICS ANALYSIS OF TRANSVERSE CRACKS IN THIN
COATINGS UNDER SPHERICAL INDENTATION
Chai H. (Israel)
- 11,50 am FRACTURING, ACOUSTIC EMISSION, AND NUMERICAL SIMULATION
OF GRANITE UNDER MODE II LOADING
*Stephansson O., Stanchits S., Backers T., Dresen G. (Germany),
Shen B. (Australia)*

10,30 am-12,10 pm

Genova Room

Topic 17 (GRAD): FUNCTIONALLY GRADED MATERIALS

SS 1 - 1: Functionally Graded Materials

Chairman: Paulino G.H. (USA)

- 10,30 am EVALUATION OF STRESS INTENSITY FACTORS AND T-STRESS IN FUNCTIONALLY GRADED MATERIALS USING THE INTERACTION INTEGRAL METHOD
Kim J.-H., Paulino G.H. (USA)
- 10,50 am MIXED-MODE CRACK PROPAGATION IN FUNCTIONALLY GRADED MATERIALS
Kim J.-H., Paulino G.H. (USA)
- 11,10 am THERMAL-MECHANICAL BUCKLING FAILURE OF MULTILAYERED BEAM-PLATE WITH ARBITRARY DELAMINATION LOCATION
Mao W.G., Zhou Y.C. (China)
- 11,30 am EFFECTS OF MATERIAL GRADATION ON THE DYNAMIC STRESS INTENSITY FACTORS
Zhang C. (Germany), Sladek J., Sladek V. (Slovakia)
- 11,50 am CORRELATIONS OF STRESS DISTRIBUTIONS ALONG THE FAULT: FROM LABORATORY FRACTURE ROUGHNESS TO FAULT ASPERITY SQUEEZE
Schmittbuhl J., Chambon G. (France), Hansen A. (Norway), Bouchon M. (France)

Catania Room

Topic 21 (HIST): HISTORICAL AND MONUMENTAL BUILDINGS

SS 1 - 2: Damage and Long-Term Behaviour of Historic Buildings

Chairlady: Binda L. (Italy)

- 10,30 am STRUCTURAL MONITORING AND LIFE-TIME ASSESSMENT OF MEDIEVAL TOWERS
Carpinteri A., Lacidogna G. (Italy)
- 10,50 am CRACK PREDICTION IN MASONRY STRUCTURES
Paradiso M., Tempesta G. (Italy)
- 11,10 am STUDIES ON THE ORIGIN OF DEFORMATION AND DAMAGE IN LONG-SPAN HISTORICAL STRUCTURES
Roca P., Clemente R. (Spain)
- 11,30 am EVOLUTION OF THE CRACK-PATTERN AS A VISIBLE EFFECT OF LONG TERM DAMAGE
Anzani A., Binda L. (Italy)
- 11,50 am NUMERICAL EVALUATION OF CRACKING AND CRUSHING IN ANCIENT MASONRY TOWERS
Carpinteri A., Invernizzi S., Lacidogna G. (Italy)

Topic 44 (WELD): WELDS

CS 1

Chairman: Toribio J. (Spain)

- 10,30 am EFFECT OF RESIDUAL STRESSES DUE TO LASER WELDING ON THE STRESS INTENSITY FACTORS OF ADJACENT CRACK
Labeas G., Tsirkas S., Diamantakos J., Kermanidis A. (Greece)
- 10,50 am PRELIMINARY INVESTIGATION BY SYNCHROTRON RADIATION OF CRACKS AND DEFECTS IN AA FSW SAMPLES
Cosmi F., Cristofori A., Mancini L., Tovo R., Tromba G., Volpone M. (Italy)
- 11,10 am FRACTURE ASSESSMENT OF LASER BEAM WELDED ALUMINIUM PANELS
Seib E., Koçak M., Assler H., Pacchione M. (Germany)
- 11,30 am EFFECTS OF MICROSTRUCTURE ON FRACTURE TOUGHNESS IN A533B SUBMERGED-ARC WELDS.
Farron V.J., do Patrocínio A., Novovic M., Bowen P. (UK)
- 11,50 am SOLIDIFICATION CRACKS IN HSLA STEEL JOINTS AFTER CONTROLLED THERMAL SEVERITY TESTS
Martínez-Mateo I., Fernández-García O. (Spain)

Friday, March 25

02,00-03,40 pm

02,00-03,40 pm

Londra Room

Topic 03 (BIO): BIOMECHANICS

SS 1 - 2: Fracture of Biomaterials and Tissues

Chairman: Taylor D. (Ireland)

- 02,00 pm TOUGHENING MECHANISMS IN MOLLUSK SHELLS
Ballarini R. (USA)
- 02,20 pm MIXED MODE FRACTURE IN RECONSTRUCTED ACETABULUM
Tong J., Wong K.Y. (UK)
- 02,40 pm ON THE WAVE PROPAGATION IN BONES
Chiroiu V., Munteanu L., Iordache D. (Romania)
- 03,00 pm FAILURE MECHANISMS OF HENS' EGGS
MacLeod N., Bain M.M., Solomon S.E., Hancock J.W. (UK)
- 03,20 pm TOWARDS FAILURE OF CYTOSKELETAL ACTIN NETWORKS
Onck P.R., Van der Giessen E. (The Netherlands)

Berlino Room

Topic 37 (RAIL): Railways

SS 1 - 2: Structural Integrity of Transportation Systems

Chairman: Hillmansen S. (UK)

- 02,00 pm A SHORT CRACK MODEL FOR FATIGUE LIMIT OF PRESS-FITTINGS IN RAILWAY AXLES
Beretta S., Cerrini A., Faustini V. (Italy)
- 02,20 pm ASSESSING FATIGUE CRACK GROWTH IN RAILWAY AXLES
Hillmansen S., Smith R.A. (UK)
- 02,40 pm FITNESS FOR PURPOSE ASSESSMENT OF A STRUCTURAL ALUMINIUM RAILWAY CAR BODY COMPONENT
Luke M., Schendera C., Blauel J.G. (Germany)
- 03,00 pm FATIGUE CRACK GROWTH IN WELDED RAILS
Ringsberg J.W., Josefson B.L., Skyttebol A. (Sweden)
- 03,20 pm FATIGUE AND FRACTURE BEHAVIOUR OF FORGED AND CAST RAILWAY WHEELS
Sivaprasad S., Tarafder S., Ranganath V.R., Parida N. (India)

02,00-03,40 pm

Madrid Room

Topic 28 (MESO): MICRO- OR MESO-SCALE CS 2

Chairman: Invernizzi S. (Italy)

- 02,00 pm PREDICTING BRITTLE FRACTURE USING THE THEORY OF CRITICAL DISTANCES: CONSTRAINT EFFECTS
Taylor D. (Ireland)
- 02,20 pm FINITE ELEMENT ANALYSES OF NOTCH-TIP FIELDS OF PLANE PIEZOELECTRIC MATERIALS CONTAINING AN ELLIPTICAL NOTCH
Wang Xinwei, Wang Xinfeng, Gong J. (China)
- 02,40 pm ANALYSIS ON CYCLIC PLASTICITY AND STRESS DISTRIBUTION OF POLYCRYSTAL AT GRAIN LEVEL
Zhang K.S., Yu H.D., Geng X.L., Guo Y.Q., Zhang G. (China)
- 03,00 pm MICROSCOPIC EXPERIMENTAL ANALYSIS OF FRACTURE TOUGHNESS IN FRACTURE OF COPPER FOILS
Kang Y.-L., Wang H.-W., Zhang Z.-F., Qin Q.-H. (China)
- 03,20 pm ON THE METHOD OF DAMAGE ASSESSMENT IN POROUS CERAMICS
Samborski S., Sadowski T. (Poland)

Parigi Room

Topic 18 (GEO): GEOPHYSICS & TECTONICS SS 1 - 1: Geophysics and Tectonics: from Fracture Mechanics to Earthquake Triggering

Chairman: Schmittbuhl J. (France)

- 02,00 pm SPECTRAL ELEMENT SIMULATION OF RUPTURE DYNAMICS
Vilotte J.-P., Festa G. (France)
- 02,20 pm EFFECTS OF NON-LINEAR WEAKENING ON EARTHQUAKE SOURCE SCALINGS
Ampuero J.-P. (USA)
- 02,40 pm NON-LINEAR SLIP-WEAKENING IN A ROTARY GOUGE FRICTION EXPERIMENT
Chambon G., Schmittbuhl J., Corfdir A. (France)
- 03,00 pm SEISMIC ENERGY RADIATION FROM DYNAMIC FAULTING
Madariaga R. (France)
- 03,20 pm APPLICATION OF DISCRETE STOCHASTIC FRACTURE NETWORKS FOR MODELLING OF GROUNDWATER FLOW
Maryška J., Severýn O., Vohralík M. (Czech Republic)

02,00-03,40 pm

Roma Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 2 - 3: Computational and Experimental Methods for Damage, Fracture and Deformation of Solids and Structures: Recent Advances

Chairman: Brünig M. (Germany)

- 02,00 pm THERMAL STRESS ANALYSIS OF TETRAGONAL SINGLE CRYSTAL DURING GROWTH PROCESS: PMO SINGLE CRYSTAL
Miyazaki N., Matsuura Y., Imahase D. (Japan)
- 02,20 pm STRUCTURAL AND MECHANICAL PROPERTIES OF AMORPHOUS SILICON: AB-INITIO AND CLASSICAL MOLECULAR DYNAMICS STUDY
Hara S., Kumagai T., Izumi S., Sakai S. (Japan)
- 02,40 pm A COMPUTATIONAL MODEL FOR DAMAGE EVOLUTION IN CERAMIC COATINGS: EFFECT OF RANDOM MICROSTRUCTURE
Silberschmidt V.V., Zhao J. (UK)
- 03,00 pm MICROSCOPIC OBSERVATION AND MODELING OF TOUGHENING MECHANISM IN RUBBER-MODIFIED POLYMER
Todo M., Arakawa K. (Japan)
- 03,20 pm 2D AND 3D CREEP DAMAGE ANALYSES FOR LOCAL HEATED TUBE OF LIGHT WATER REACTOR
Hagihara S., Miyazaki N. (Japan)

Lisbona Room

Topic 16 (FATIG): FATIGUE

CS 7

Chairman: Bowen P. (UK)

- 02,00 pm THE INFLUENCE OF BIAXIAL STRESS ON THE FATIGUE BEHAVIOR OF DEFECT-CONTAINING STEELS
McEvily A.J. (USA), Endo M., Ishihara S. (Japan)
- 02,20 pm T-STRESS AND MODE I FATIGUE CRACK GROWTH
Hamam R., Pommier S., Bumbieler F. (France)
- 02,40 pm A RESIDUAL STRESS CRACK OPENING APPROACH AFTER AN OVERLOAD DURING FATIGUE
Lebaillif D., Darcis P., Recho N. (France)
- 03,00 pm THE EFFECT OF WARM SHOT PEENING ON THE FATIGUE PERFORMANCE OF A SAE 5160 SPRING STEEL
Ruy M.C., Tarpani J.R., Milan M.T., Spinelli D., Bose W.W. (Brazil)

02,00-03,40 pm

Atene Room

Topic 16 (FATIG): FATIGUE

CS 8

Chairman: Ishihara T. (Japan)

- 02,00 pm INFLUENCE OF BENDING FATIGUE ON RESIDUAL MECHANICAL PROPERTIES OF A γ -TiAl INTERMETALLIC ALLOY
Marino F., Rebuffo A., Sglavo V.M. (Italy)
- 02,20 pm ON FATIGUE BEHAVIOR OF SMALL CRACKS INDUCED BY FOREIGN-OBJECT DAMAGE IN Ti-6Al-4V
Chapetti M.D. (Argentina)
- 02,40 pm FRETTING FATIGUE INVESTIGATION OF DOVETAIL
Naboulsi S., Calcaterra J. (USA)
- 03,00 pm HIGH-TEMPERATURE FATIGUE CRACK GROWTH BEHAVIOR OF 17-4 PH STAINLESS STEELS
Hsu K.-C., Lin C.-K. (Taiwan)
- 03,20 pm FATIGUE CRACK GROWTH BEHAVIOR OF A NEAR α IMI-834 TITANIUM ALLOY AT ELEVATED TEMPERATURE
Kumar V., Nagalaxmi G. (India)

Dublino Room

Topic 39 (RELIA): RELIABILITY

SS 1 - 3: Statistical Methods in Fracture and Fatigue

Chairman: Harlow D.G. (USA)

- 02,00 pm RUNOUT ANALYSIS IN FATIGUE INVESTIGATION
Sarkani S. (USA), Mazzuchi T. A. (USA), Lewandowski D. (The Netherlands), Kihl D.P. (USA)
- 02,20 pm AN ANALYTICAL AND EXPERIMENTAL STUDY TO ESTABLISH "CRITICAL FLAW SIZES" FOR HIGH PRESSURE SEAMLESS CYLINDERS
Smith J.H., Rana M.D. (USA)
- 02,40 pm SIMULATION ON MICROCRACK INITIATION IN F82H MARTENSITIC STEEL
Huang X., Brückner-Foit A. (Germany)
- 03,00 pm A NOVEL METHOD FOR FRACTURE TOUGHNESS ASSESSMENT OF INHOMOGENEOUS FERRITIC STEEL WELDMENTS USING BIMODAL MASTER CURVE ANALYSIS
Nevasmaa P., Laukkanen A., Planman T., Wallin K. (Finland)
- 03,20 pm CRACK IDENTIFICATION IN A BEAM BY MEASURE OF THE RESPONSE TO WHITE NOISE
Benfratello S., Cacciola P., Impollonia N., Masnata A., Muscolino G. (Italy)

02,00-03,40 pm

Copenhagen Room

Topic 26 (MEMS): MEMS

SS 2 - 2: MEMS

Chairman: Auersperg J. (Germany)

- 02,00 pm CRACK AND DELAMINATION RISK EVALUATION OF THIN SILICON BASED MICROELECTRONICS DEVICES
Auersperg J., Vogel D., Michel B. (Germany)
- 02,20 pm COHESIVE ZONE-BASED MODELLING OF Si/Si AND SiO₂/SiO₂ INTERFACES IN THE PRESENCE OF A DUCTILE INTERLAYER
Bertholet Y., Raskin J.P., Pardoën T. (Belgium)
- 02,40 pm NANODAC – A METHOD FOR FRACTURE MECHANICAL CHARACTERIZATION ON THE NANOSCALE
Keller J., Vogel D., Michel B. (Germany)
- 03,00 pm GROWTH OF CRACKS BRIDGED BY NANOFIBERS
Perelmuter M. (Russia)
- 03,20 pm PROBABILISTIC APPROACHES FOR FRACTURE AND RELIABILITY ESTIMATIONS OF MICROSYSTEMS
Winkler T., Michel B., Wunderle B. (Germany)

Firenze Room

Topic 33 (OIL): OIL & GAS PRODUCTION AND DISTRIBUTION

SS 1 - 2: Oil & Gas Production and Distribution

Chairman: Salvini P. (Italy)

- 02,00 pm EXPERIMENTAL DETERMINATION OF CTOA TOUGHNESS
Hashemi S.H. (Iran), Gay R., Howard I.C., Yates J.R., Andrews R.M. (UK)
- 02,20 pm ADVANCES IN CRACK ASSESSMENT FOR PIPELINE INTEGRITY
Katz D., Gao M., Limon S., Krishnamurthy R. (USA)
- 02,40 pm NUMERICAL LIMIT LOAD ANALYSIS OF PIPELINES WITH LOCAL WALL-THINNINGS
Liu Y., Chen G., Xu B. (China)
- 03,00 pm A CONSTRAINT BASED APPROACH TO CORRELATE FRACTURE BEHAVIOR IN TEST SPECIMENS AND CRACKED PIPELINES
Cravero S., Ruggieri C. (Brazil)
- 03,20 pm DEVELOPMENT OF ACCEPTANCE/REJECTION CRITERIA FOR REQUALIFICATION OF HIGH PRESSURE GAS CYLINDERS
Rana M.D., Smith J.H. (USA)

02,00-03,40 pm

Venezia Room

Topic 25 (INV): INVERSE PROBLEMS

SS 1 - 1: Inverse Problems and Damage Identification

Chairman: Hu N. (Japan)

- 02,00 pm ACTIVE AND PASSIVE ELECTRIC POTENTIAL CT METHODS INCORPORATING INVERSE ANALYSIS SCHEMES FOR CRACK AND DEFECT IDENTIFICATION
Kubo S., Sakagami T., Shiozawa D. (Japan)
- 02,20 pm DERIVATION OF FILM CHARACTERISTIC CONSTANTS BY USING GOVERNING PARAMETER FOR ELECTROMIGRATION DAMAGE IN PASSIVATED BAMBOO LINE
Hasegawa M., Sasagawa K., Saka M. (Japan)
- 02,40 pm SIMPLE EVALUATION OF ELASTICITY IN NANO-METER SCALE USING A FLAT-ENDED SENSOR TIP IN SENSITIVITY-ENHANCED ATOMIC FORCE ACOUSTIC MICROSCOPY
Muraoka M., Komatsu S. (Japan)
- 03,00 pm MICROWAVE NDE OF A SMALL 3-D CRACK ON THE SURFACE OF STAINLESS STEEL
Ju Y., Saka M., Uchimura Y. (Japan)
- 03,20 pm IDENTIFICATION OF PLASTIC-ZONE BASED ON DOUBLE FREQUENCY LOCK-IN THERMOGRAPHIC TEMPERATURE MEASUREMENT
Sakagami T., Kubo S., Tamura E., Nishimura T. (Japan)

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT

CS 1

Chairman: Puls M. (Canada)

- 02,00 pm DEVELOPMENTS IN DELAYED HYDRIDE CRACKING IN ZIRCONIUM ALLOYS
Puls M.P. (Canada)
- 02,20 pm USE OF EBSD TO STUDY HYDROGEN INDUCED CRACKING IN PIPELINE STEEL
Venegas V., Caleyó F., González J.L. (México), Baudin T. (France), Hallen J.M. (México), Penelle R. (France)
- 02,40 pm HYDROGEN ENVIRONMENT EMBRITTLEMENT OF LOW ALLOY STEEL AT ROOM TEMPERATURE
Wada Y., Ishigaki R., Tanaka Y., Iwadate T., Ohnishi K. (Japan)
- 03,00 pm STUDY OF HYDROGEN-INDUCED PLASTIC DEFORMATION IN BULK METALLIC GLASS
J.X. Li, Wang Y.W., Shan G.B., Qiao L.J., Chu W.Y. (China)
- 03,20 pm DIFFUSION AND STRAIN-ASSISTED TRANSPORT AND TRAPPING OF HYDROGEN IN FERRITIC STEELS
Brass A.-M., Chêne J. (France)

02,00-03,40 pm

Napoli Room

Topic 29 (MIXED): MIXED MODE

MS 1 - 4: Mixed Mode Crack Growth

Chairman: Valente S. (Italy)

- 02,00 pm ABOUT THE NECESSITY OF NEW TESTING PROCEDURES FOR MIXED MODE FRACTURE OF QUASIBRITTLE MATERIALS
Gálvez J.C., Planas J., Elices M., Cendón D.A., Sancho J.M., Reyes E. (Spain)
- 02,20 pm AN INTERACTION INTEGRAL METHOD FOR COMPUTATION OF T-STRESS ALONG THE FRONTS OF GENERAL NON-PLANAR CRACKS IN THREE-DIMENSIONS
Gosz M. (USA)
- 02,40 pm CRACK INITIATION MODELING IN BIAXIAL LOW CYCLE FATIGUE AND SIMULATION OF GRAIN GEOMETRY EFFECT ON FATIGUE DAMAGE
Hoshide T. (Japan)
- 03,00 pm MIXED-MODE CRACK GROWTH AND PATH IN THREE POINT BENDING CRACKED SPECIMEN
Zacharopoulos D.A., Kalaitzidis P.A., Amaxas I.C. (Greece)
- 03,20 pm EFFECT OF THE ANISOTROPY ON THE CRACK BIFURCATION ANGLE
Lahna F., Chahir Idrissi M. (Morocco)

Genova Room

Topic 11 (DEBON): DEBONDING

CS 1

Chairman: Leguillon D. (France)

- 02,00 pm STUDY THERMAL RESIDUAL STRESSES IN A BI-MATERIAL CERAMIC-METAL: CASE OF THE BOTH Ag/Al₂O₃ AND Pt/Al₂O₃
Boutabout B., Serier B., Bachir Bouiadjra B., Belhouari M., Kaddouri K. (Algeria)
- 02,20 pm STRESS ANALYSIS OF THIN ADHESIVE BONDING DISSIMILAR ADHERENDS SINGLE LAP JOINTS
Fongsamootr T., Dechwayukul C. (Thailand)
- 02,40 pm NUMERICAL ANALYSIS OF INTERFACE FRACTURE IN TWO LAYER COMPOSITES UNDER MIXED MODE LOADING
Figiel L., Lauke B. (Germany)
- 03,00 pm A CRITERION FOR INTERFACIAL DEBONDING IN THE VICINITY OF A MATRIX CRACK
Martin E., Leguillon D. (France)
- 03,20 pm NUMERICAL ANALYSIS OF THE CRACK DEFLECTION AT CERAMIC - METAL INTERFACE
Belhouari M., Serier B., Bachir Bouiadjra B., Boutabout B. (Algeria)

02,00-03,40 pm

Catania Room

Topic 45 (WOOD): WOOD

55 1 - 1: Fracture of Wood

Chairman: Gustafsson P.J. (Sweden)

- 02,00 pm FRACTURE AND MICROSTRUCTURE OF WOOD
Stanzl-Tschegg S.E., Frühmann K., Tschegg E.K. (Austria)
- 02,20 pm MODELISATION OF DELAYED FAILURE OF WOOD BEAMS
Chaplain M., Valentin G. (France)
- 02,40 pm NON-LINEAR FRACTURE MECHANICS APPLIED TO WOOD IN MODE I
Coureau J.L., Morel S. (France)
- 03,00 pm MIXED MODE ENERGY RELEASE RATE ANALYSIS BY A BEAM THEORY APPLIED TO TIMBER BEAMS WITH A HOLE
Gustafsson P.J. (Sweden)
- 03,20 pm FRACTURE ENERGY IN MODE I AND MODE II OF REINFORCED WOOD
Haller P., Putzger R. (Germany)

Bologna Room

Topic 44 (WELD): WELDS

CS 2

Chairman: Koçak M. (Germany)

- 02,00 pm FATIGUE BEHAVIOR OF WELDED JOINTS IN A FERRITIC STAINLESS STEEL SUS444
Nakajima M., Akita M., Tokaji K., Takai Y. (Japan)
- 02,20 pm MECHANICAL AND MICROSTRUCTURAL PROPERTIES OF AL 6056 FRICTION STIR WELDED JOINTS
Cavaliere P., Nobile R., Panella F.W., Squillace A. (Italy)
- 02,40 pm UTILISING PHASE RELATIONSHIPS FOR AUTOMATIC WELD FLAW CATEGORISATION IN TIME-OF-FLIGHT DIFFRACTION IMAGES
Zahran O., Al-Nuaimy W. (UK)
- 03,00 pm CYCLIC DEFORMATION BEHAVIOUR OF DEEP ROLLED AND LASER-SHOCK PEENED AISI 304 STAINLESS STEEL AT ELEVATED TEMPERATURE
Nikitin I., Altenberger I., Scholtes B. (Germany)

Friday, March 25

04,10-05,50 pm

04,10-05,50 pm

Londra Room

Topic 03 (BIO): BIOMECHANICS

SS 1 - 3: Fracture of Biomaterials and Tissues

Chairman: Hancock J. (UK)

- 04,10 pm PROBING THE NANOMECHANICAL PROPERTIES OF TEETH
Lim C.T., Hairul Nizam B.R., Chng H.K., Yap A.U.J. (Singapore)
- 04,30 pm TENSILE FRACTURE BEHAVIOR AND CASTING DEFECTS OF BETA TYPE Ti-29Nb-13Ta-4.6Zr CAST BY DENTAL PRECISION CASTING PROCESSING
Niinomi M., Akahori T., Manabe T., Takeuchi T., Katsura S. (Japan)
- 04,50 pm CONTACT DAMAGE IN DENTAL MULTILAYERS: FROM EXPERIMENTS TO MECHANISM-BASED MODELS AND BIOINSPIRED DESIGN
Huang M., Shrotriya P., Zhou J.K., Niu X., Thompson V., Rekow D., Soboyejo W.O. (USA)
- 05,10 pm MULTI-SCALE MECHANICAL BEHAVIOR OF METALLIC FOAMS: FROM STRUTS TO FOAMS
Zhou J., Gao Z., Allameh S., Cuitino A.M., Soboyejo W.O. (USA)
- 05,30 pm STRENGTH DISTRIBUTIONS OF SINTERED HYDROXYAPATITE NANOPARTICLES
Chandrasekhar K., Shaw M.T., Wei M. (USA)

Berlino Room

Topic 37 (RAIL): Railways

SS 1 - 3: Structural Integrity of Transportation Systems

Chairman: Beretta S. (Italy)

- 04,10 pm EXPERIMENTAL DETERMINATION OF K_I , K_{II} , K_{III} OF INTERNAL CRACKS UNDER ROLLING CONTACT LOADING
Guagliano M., Sangirardi M., Vergani L. (Italy)
- 04,30 pm MICROSTRUCTURE-BASED EVALUATION OF THE FATIGUE BEHAVIOUR OF RAILWAY WHEEL STEELS
Walther F., Eifler D. (Germany)
- 04,50 pm MATERIAL AND STRUCTURAL BEHAVIOUR OF MIG BUTT WELDS IN 6000 SERIES ALUMINIUM ALLOY EXTRUSIONS FOR RAIL VEHICLES
Xu W., Gittos M.F. (UK)
- 05,10 pm AN INVERSE APPROACH FOR CONSTRUCTING RESIDUAL STRESS FIELD INDUCED BY WELDING
Hu N. (Japan), Cao Y.P. (France), Lu J. (France), Fukunaga H. (Japan)

04,10-05,50 pm

Madrid Room

Topic 13 (DURA): DURABILITY

CS 1

Chairlady: Riccò T. (Italy)

- 04,10 pm CONTACT FATIGUE IN TURBINE ENGINES DUE TO AEROELASTIC AND INERTIAL LOADING
Calcaterra J.R., Naboulsi S. (USA)
- 04,30 pm DURABILITY ISSUES AND MANAGEMENT OF AGING P-3C AIRCRAFT
Iyyer N.S., Phan N. (USA)
- 04,50 pm THE OPTIMAL DESIGN FOR FATIGUE LIFE USING BIOLOGICAL METHOD
Peng D., Jones R. (Australia)
- 05,10 pm DURABILITY OF HYBRID FIBER METAL COMPOSITE LAMINATES
Burianek D.A., Shim D.-J., Spearing S.M. (USA)

Parigi Room

Topic 32 (NLFM): NONLINEAR FRACTURE MECHANICS

MS 1 - 4: Nonlinear Fracture Mechanics

Chairman: Lapusta N. (USA)

- 04,10 pm ANALYSIS OF LOADING RATE EFFECTS ON CLEAVAGE FRACTURE TOUGHNESS OF FERRITIC STEELS
Gao X., Dodds Jr. R.H. (USA)
- 04,30 pm IN-PLANE AND OUT-OF-PLANE CONSTRAINT EFFECTS IN THREE-DIMENSIONAL ELASTIC PERFECTLY-PLASTIC CRACK TIP FIELDS
Yusof F., Hancock J.W. (UK)
- 04,50 pm COHESIVE ZONE MODELLING OF CRACK GROWTH IN PARTICLE REINFORCED METAL MATRIX COMPOSITES
Rossoll A., Miserez A., Mortensen A. (Switzerland)
- 05,10 pm INTERFACE CRACK GROWTH BY VOID EXPANSION MECHANISMS BETWEEN DUCTILE SOLID AND ELASTIC SUBSTRATE
Tvergaard V. (Denmark)
- 05,30 pm ELASTIC-PLASTIC FRACTURE TOUGHNESS OF HIGH PRESSURE STEEL TUBE
Yamamoto S., Yajima H. (Japan)

04,10-05,50 pm

Roma Room

Topic 06 (COMPU): COMPUTATIONAL MECHANICS

MS 2 - 4: Computational and Experimental Methods for Damage, Fracture and Deformation of Solids and Structures: Recent Advances

Chairman: Miyazaki N. (Japan)

- 04,10 pm MOLECULAR DYNAMICS SIMULATION ON PLASTIC DEFORMATION PROCESSES AROUND A CRACK TIP UNDER CYCLIC LOADING
Nishimura K., Miyazaki N. (Japan)
- 04,30 pm PLASTIC INSTABILITY ANALYSIS OF THIN-WALLED TUBE UNDER TENSION-PRESSURE COMBINED LOADING
Tadano Y., Noguchi H., Kuroda M. (Japan)
- 04,50 pm MOLECULAR-DYNAMICS STUDY ON FRACTURE PROPERTY OF AMORPHOUS METAL WITH CRYSTALLIZATION
Matsumoto R., Nakagaki M., Nakatani A., Kitagawa H. (Japan)
- 05,10 pm IDENTIFICATION OF EXTERNAL LOADS TO DYNAMIC SYSTEMS AS THE METHOD OF DEFECTS DEFINITION
Menshikov Y. (Ukraine)
- 05,30 pm RESIDUAL STRESSES BEHAVIOR UNDER FATIGUE CRACK CYCLIC LOADING: A FINITE ELEMENT ANALYSIS
Gonçalves E., Gonzales M.A.C. (Brazil)

Lisbona Room

Topic 16 (FATIG): FATIGUE

CS 9

Chairman: Sedmak S. (Serbia and Montenegro)

- 04,10 pm QUANTITATIVE ASSESSMENT OF FATIGUE CRACK GROWTH PATH ON PROPAGATION CYCLE ESTIMATION
Bowry M., Glover N., Rugg D., Bowen P. (UK)
- 04,30 pm A COMPARISON OF TWO EXPERIMENTAL METHODS FOR ASSESSING THE INFLUENCE OF INITIAL DEFECTS ON FATIGUE LIFE
Gänser H.-P., Gódor I., Eichlseder W., Pippan R., Ofner R., Vollgger R. (Austria)
- 04,50 pm NEAR THRESHOLD FATIGUE CRACK GROWTH SIMULATION
Meshii T., Ishihara K., Watanabe K. (Japan)
- 05,10 pm INFLUENCE OF THE YIELD STRESS AND THE HARDENING OF THE MATERIAL ON THE FATIGUE CRACK GROWTH AFTER PEAK LOADS – A FINITE ELEMENT ANALYSIS
Sander M., Richard H.A., Grond M. (Germany)
- 05,30 pm STRESS AND STRAIN IN FRONT OF THE FATIGUE CRACK WITH SHEAR LIPS
Materna A., Oliva V. (Czech Republic)

04,10-05,50 pm

Atene Room

Topic 16 (FATIG): FATIGUE

CS 10

Chairman: Rebuffo A. (Italy)

- 04,10 pm SIZE AND SCALE EFFECTS IN FRETTING FATIGUE THRESHOLDS
Dini D., Nowell D., Korsunsky A.M. (UK)
- 04,30 pm LOCAL COMPLIANCE EXPERIMENTS AND CRACK CLOSURE MODELS
Carboni M. (Italy)
- 04,50 pm ASSESSMENT OF LOAD RATIO EFFECT ON FATIGUE CRACK GROWTH USING PARTIAL CRACK CLOSURE
Fersini D., Pirondi A. (Italy)
- 05,10 pm APPLICATION OF THE ENERGY PARAMETER FOR FATIGUE LIFE ESTIMATION UNDER UNIAXIAL RANDOM LOADING WITH THE MEAN VALUE
Kluger K., Karolczuk A., Lagoda T., Macha E. (Poland)
- 05,30 pm FATIGUE LIFE EVALUATION OF WELDED JOINTS BASED ON NOMINAL STRESS AND FINITE ELEMENT ANALYSIS
Goo B.C., Yang S.Y., Seo J.W. (South Korea)

Dublino Room

Topic 14 (ELEC): ELECTRONIC MATERIALS

SS 1 - 2: Fracture Processes in Microelectronics

Chairman: Kishimoto K. (Japan)

- 04,10 pm ENVIRONMENTAL EFFECTS ON THE ADHESION OF GOLD MICROCIRCUIT FILMS
Cordill M.J., Moody N.R., Adams D.P., Yang N., Bahr D.F., Gerberich W.W. (USA)
- 04,30 pm PROPERTIES AND FRACTURE OF TUNGSTEN-ALUMINA ATOMIC LAYER DEPOSITED NANOLAMINATES
Jungk J.M., Moody N.R., Mayer T.M., Wind R.A., George S.M., Gerberich W.W. (USA)
- 04,50 pm FRACTURE OF ATOMIC LAYER DEPOSITED TUNGSTEN FILMS
Moody N.R., Jungk J.M., Mayer T.M., Wind R.A., George S.M., Gerberich W.W. (USA)
- 05,10 pm A NEW TECHNIQUE FOR THE CHARACTERIZATION OF THE ADHESION IN INTEGRATED CIRCUIT INTERCONNECT STRUCTURES
Molina J., Ocana I., Gonzalez D., Elizalde M.R., Sanchez J.M., Martinez-Esnaola J.M., Gil Sevillano J. (Spain), Scherban T., Pantuso D., Sun B., Xu G., Miner B., He J., Maiz J. (USA)
- 05,30 pm EXPLICIT EXPRESSION FOR STRESS IN MULTI-LEVEL LINE STRUCTURES AND IN CONNECTING VERTICAL VIAS
Rosakis A.J., Park T.-S., Suresh S. (USA)

04,10-05,50 pm

Copenhagen Room

Topic 26 (MEMS): MEMS

CS 1

Chairman: Wittler O. (Germany)

- 04,10 pm ATOMIC SCALE FRICTION AND ITS CONNECTIONS TO FRACTURE
Carpick R.W. (USA)
- 04,30 pm STM/SEM METHOD FOR TESTING BENDING STRENGTH OF MEMS BEAMS
Tuncay A., Shepherd C., Zalalutdinov M., Zehnder A.T., Craighead H. (USA)
- 04,50 pm VOID GROWTH IN FCC AND BCC SINGLE CRYSTALS
Kysar J.W., Gan Y.X. (USA)
- 05,10 pm EMBEDDED ATOM METHOD SIMULATIONS OF SINGLE CRYSTAL NICKEL DUCTILE FRACTURE
Potirniche G.P., Horstemeyer M.F., Wagner G.J., Gullett P.M. (USA)
- 05,30 pm FATIGUE OF SELF-HEALING POLYMERS: MULTISCALE ANALYSIS AND EXPERIMENTS
White S.R., Maiti S., Jones A.S., Brown E.N., Sottos N.R., Geubelle P.H. (USA)

Firenze Room

Topic 33 (OIL): OIL & GAS PRODUCTION AND DISTRIBUTION

CS 1

Chairlady: Vergani L. (Italy)

- 04,10 pm CYCLIC FRACTURE BEHAVIOUR OF PHT PIPING MATERIAL
Tarafder S., Sivaprasad S., Ranganath V.R., Johri P., Ray K.K. (India)
- 04,30 pm STRAIN HISTORY EFFECTS ON FRACTURE MECHANICS PARAMETERS
Ernst H.A., Bravo R.E., Villasante J.A. (Argentina), Izquierdo A. (Mexico)
- 04,50 pm THEORETICAL AND EXPERIMENTAL MODELING OF THE THERMOMECHANICAL RUPTURE OF PRESSURE TUBE FOR RBMK REACTOR
Medvedeva N.Y., Peshkov I.A., Andreev A.V., Goldstein R.V., Zhitnikov Y.V., Kadochnikov I.V. (Russia)
- 05,10 pm CHANGES IN HYDROGEN DESORPTION PROFILES AND MATERIALS DEGRADATION IN 12%CR ROTOR STEEL
Komazaki S., Sugimoto T. (Japan)
- 05,30 pm THE EFFECT OF SHRINKAGE CRACKS ON THE SOIL SURFACE MICRORELIEF
Chertkov V.Y. (Israel)

04,10-05,50 pm

Venezia Room

Topic 25 (INV): INVERSE PROBLEMS

55 1 - 2: Inverse Problems and Damage Identification

Chairman: Sakagami T. (Japan)

- 04,10 pm INVERSE ESTIMATES OF FRACTURE MODEL PARAMETERS
Iacono C., Sluys L.J. (The Netherlands), van Mier J.G.M. (Switzerland)
- 04,30 pm USE OF AN INVERSE ANALYSIS TO DETERMINE THE ELASTOPLASTIC MATERIAL PROPERTIES FROM INDENTATION TESTS
Gamonpilas C. (UK, Thailand), Busso E. P. (UK)
- 04,50 pm DAMAGE DETECTION USING WAVELET TRANSFORM
Garstecki A., Knitter-Piatkowska A., Pozorski Z., Ziopaja K. (Poland)
- 05,10 pm ON THE EXISTENCE OF A UNIQUE STRESS-DEFORMATION RELATION FOR AN ADHESIVE LAYER LOADED IN SHEAR
Leffler K., Stigh U. (Sweden)
- 05,30 pm EVALUATION OF PROPERTIES OF SUB-MICROMETER THIN FILMS USING HIGH FREQUENCY ULTRASONIC WAVES
Wu T.-T., Chen Y.-Y., Huang G.-T. (Taiwan)

Milano Room

Topic 22 (HYDR): HYDROGEN EMBRITTLEMENT

CS 2

Chairman: Yagodzinsky Y. (Finland)

- 04,10 pm EXPERIMENTAL INVESTIGATION OF STRAIN, DAMAGE AND FAILURE OF HYDRIDED ZIRCONIUM ALLOYS WITH VARIOUS HYDRIDE ORIENTATIONS
Racine A., Bornert M., Sainte-Catherine C., Cappelaere C., Caldemaison D. (France)
- 04,30 pm EFFECTS OF THE HYDRIDE CONCENTRATION AND THE NEAR CRACK TIP GRADIENT ON THE FRACTURE TOUGHNESS OF ZIRCALOY-4
Bertolino G. (France), Perez Ipiña J., Meyer G. (Argentina)
- 04,50 pm EFFECT OF TENSILE STRENGTH ON PITTING CORROSION RESISTANCE AND HYDROGEN DESORPTION PROFILE IN AUTOMOBILE SPRING STEELS
Kobayashi K., Yamaguchi A., Komazaki S.-I., Misawa T., Kohno Y., Fukuzumi T. (Japan)
- 05,10 pm IMPROVEMENT OF DEGRADATION OF TOOL STEELS DUE TO PLATING
Ohtsuka N., Shindo Y., Ogawa H., Mashiro T., Mori K., Hashinaga S. (Japan)
- 05,30 pm HYDROGEN-DISLOCATION INTERACTIONS AND THEIR ROLE IN HELP MECHANISM OF HYDROGEN EMBRITTLEMENT
Yagodzinsky Y., Hänninen H. (Finland)

04,10-05,50 pm

Napoli Room

Topic 29 (MIXED): MIXED MODE

MS 1 - 5: Mixed Mode Crack Growth

Chairman: Gdoutos E.E. (Greece)

- 04,10 pm THE MIXED-MODE EXPERIMENTAL INVESTIGATION OF THE FATIGUE CRACK IN CTS METALLIC SPECIMEN
Ma S., Zhang X.B., Recho N. (France)
- 04,30 pm MIXED-MODE CRACK GROWTH IN TOUGHENED PMMA
Andena L., Corigliano A., Frassine R., Mariani S. (Italy)
- 04,50 pm NON PLANAR CRACK PROPAGATION IN CONCRETE SPECIMENS
Barpi F., Valente S. (Italy)
- 05,10 pm AUTOMATIC CRACK BOX TECHNIQUE FOR BRITTLE AND DUCTILE CRACK PROPAGATION AND BIFURCATION CRITERIA
Lebaillif D., Recho N. (France)
- 05,30 pm DISCRETE MODELING OF MIXED-MODE FRACTURE IN CONCRETE
Shi Z. (Japan)

Genova Room

Topic 11 (DEBON): DEBONDING

CS 2

Chairman: Paggi M. (Italy)

- 04,10 pm ON THE EVALUATION OF INTERFACIAL CRACK INITIATION BY MEANS OF FINITE FRACTURE MECHANICS
Müller A., Hohe J., Becker W. (Germany)
- 04,30 pm DEFORMATION LIMITS OF POLYMER COATED METAL SHEETS
Van Den Bosch M.J., Schreurs P.J.G., Geers M.G.D. (The Netherlands)
- 04,50 pm ANISOTROPIC PLANE THAT CONTAINS A CIRCULAR INCLUSION WITH IMPERFECT INTERFACE
Wang C.-H. (Taiwan)
- 05,10 pm DYNAMIC BEHAVIOR OF SHEAR DEFORMABLE LAMINATED COMPOSITES WITH DELAMINATIONS AND EDGE CRACKS
Kolar R. (USA)
- 05,30 pm ON THE PRESERVATION OF THE SLIDING CONDITION FOR THE SECOND MODE PROBLEM
Golecki J.J. (Israel)

04,10-05,50 pm

Catania Room

Topic 45 (WOOD): WOOD
SS 1 - 2: Fracture of Wood
Chairman: Navi P. (Switzerland)

- 04,10 pm FRACTURE BEHAVIOUR OF MULTIPLE-BOLT ENGINEERED WOOD PRODUCT CONNECTIONS
Snow M.A., Asiz A., Smith I. (Canada)
- 04,30 pm THICKNESS EFFECT IN WOOD – STATISTICAL OR STRUCTURAL?
Vasić S. (Austria), Smith I. (Canada), Landis E. (USA), Chen Z. (Canada)
- 04,50 pm THE MECHANICS OF SAWING WOOD
Atkins T. (UK)
- 05,10 pm ON THE USE OF PLATE AND INTERFACE VARIABLES FOR DELAMINATION IN COMPOSITES
Bruno D., Greco F. (Italy)
- 05,30 pm EFFECTS OF MISSING CELLS ON THE COMPRESSIVE DEFORMATION OF THE CLOSED-CELL AL FOAM
Jeon I., Yamada Y., Yamada T., Katou K., Sonoda T., Asahina T. (Japan)

Bologna Room

Topic 42 (SURF): SURFACE TREATMENTS
CS 1
Chairman: Kermanidis A. (Greece)

- 04,10 pm FATIGUE BEHAVIOUR PREDICTION OF LASER SURFACE TREATED ALUMINIUM PLATES THROUGH SIMULATION OF THE LASER STRIPPING PROCESS
Labeas G., Tsirkas S., Kermanidis A., Pantelakis Sp. (Greece)
- 04,30 pm NANOMETER SCALE TRIBOCHEMICAL MODIFICATION OF SURFACES
Dickinson J.T. (USA)
- 04,50 pm FATIGUE CRACK GROWTH BEHAVIOR OF NITRIDED AND SHOT PEENED SPECIMENS
Guagliano M., Vergani L. (Italy)
- 05,10 pm FATIGUE PROPERTIES OF TITANIUM ALLOY, STAINLESS STEEL AND ALUMINUM ALLOY TREATED WITH FINE PARTICLE BOMBARDMENT
Kameyama Y., Akebono H., Komotori J., Shimizu M. (Japan)
- 05,30 pm EFFECT OF INTERNAL CRACKING ON FATIGUE LIFE OF 7050 ALUMINUM ALLOY TREATED BY LASER SHOCK PROCESSING
Liu Q., Barter S.A., Sharp P.K., Rey C., Ding K., Ye L., Clark G. (Australia)



General Information



Organizing Secretariat

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Conference Venue

LINGOTTO CONFERENCE CENTRE
Via Nizza, 280 - 10126 Turin (Italy)
www.expo2000.it

How to reach the Conference venue

Lingotto Conference Centre is served by several bus lines (Public Transport Service). Tram/bus n. 1, 18, 35 are available from city centre to Lingotto Conference Centre.

Registration

All participants are requested to register. Registration takes place at the Congress Centre Registration Desk. All Conference material is handed out upon registration according to reservations made on the registration form.

Badges

All registered participants receive a Badge upon registration. Exhibiting companies have Exhibitor Passes. Your Badge is the document to enter the Conference and any of the working rooms. We kindly ask you to wear your Badge visible during all events. Refreshments will be served free of charge only to identifiable Conference participants during morning and afternoon coffee breaks.

Fees

Fee per person (VAT included)

Late Registrations (after December 15, 2004)	Euro 520,00
Students	Euro 300,00
Concert & Banquet for Students and Accompanying Persons	Euro 80,00

Language

The official language of the Conference is English. Simultaneous translation will not be provided.

Internet point

An Internet Service Point is available to Delegates on the main floor of the Lingotto Conference Centre. Please note that 10 minutes is the time limit per session.

Instructions to Authors - Slide Centre

Scientific Presentations will be given on Personal Computer: Power Point-XP (and previous versions), or file .pps are available. Alternatively, the overhead projector could be requested. Please ask for help at the Slide Centre of Lingotto Conference Centre not less than two hours before your presentation (or the day before, if your presentation is scheduled in the morning).

Conference Assistants

There is a Conference Assistant assigned to each working room to help chairpersons and speakers to use presentation tools.

Meals and Coffee Breaks

Conference lunches are not included in the registration fee. Many different types of restaurants are located in " 8 Gallery" upstairs Lingotto Conference Centre. Morning and afternoon coffee breaks are served in the main floor of Conference Centre.

Foreign Exchange and Banking

Upstairs the Conference Centre, in " 8 Gallery", there is a Bank (open Monday-Friday) and a Bancomat-VISA cash dispenser. Most international credit cards are accepted in shops, hotels and restaurants.

Social Programme

WELCOME RECEPTION:

Sunday, March 20, 2005 - 06,00-08,00 pm
Lingotto Conference Centre

CONCERT & CONFERENCE BANQUET:

Wednesday, March 23, 2005 - 08,30-12,00 pm
Teatro Regio - Piazza Castello, 215

Post Conference Mini-Symposium in Venice

A Mini-Symposium on "*Damage and Repair of Historical and Monumental Buildings*" has been planned on March 29, 2005 (09,00 am-06,00 pm), at Venice IUAV University (Piazza dei Tolentini-Santa Croce, 191), located close to the Railway Station and Piazzale Roma.

For further information:

www.iuav.it/Ateneo1/Sedi/Sedi-venez/Tolentini/



ICF11 Chairman

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