European Structural Integrity Society

ESIS Newsletter #49, March, 2012

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EDITORIAL BY THE ESIS PRESIDENT

We are all looking forward to ECF19 in Kazan which will take place from August 26 until August 31. There have been 490 abstracts submitted to the conference. In addition, there are many invited lectures on a variety of topics. Quite a number of special sessions are planned, as well as mini-symposia. There are direct international flights to Kazan, as well as 14 daily flights from Moscow. The conference will be held at the Korston Hotel and Mall. It should be noted that Russia requires entry visas from many countries. For EU countries, the procedure takes from 10 days to two weeks. For other countries, it may take up to five weeks. After registering for the conference, you will receive a letter of invitation from the conference chairman. So please take care of these details sufficiently early. Recall that people who are registered as members of ESIS either for 2011 or 2012 receive a 50 Euro reduction on their conference registration fee. We hope to see many old and new friends at the conference.

ECF20 is planned for Trondheim, Norway in 2014. At the next ESIS Council meeting in Kazan, we will decide on the venue for ECF21. Bids for that meeting are welcomed.

Our blog in which Wolfgang Brocks reviews different papers from Engineering Fracture Mechanics continues to receive attention. This information may be found through our web site at

www.structuralintegrity.eu
or from the direct link
www.imechanica.org/blog/23810
Wolfgang has reviewed four papers and over 6,000 people have looked at the reviews. There have been a few interesting responses. I would like to encourage you to read these interesting pieces and respond.

The Executive Committee at their meeting in Berlin in September, 2011, revised the ESIS Statutes. These changes must be approved by the ESIS Council. Since there are so many changes, the updated Statutes will be submitted in March to National Representatives who are entitled to vote and TC Chairman. If there are any comments, we will try to work on the suggestions for final approval before the meeting in Kazan. If there are still some open issues, these will be discussed at the Council meeting.

Antonio Martin-Meizoso and Liviu Marsavina have agreed to work with us to raise money for ESIS. One of the ideas is for the TCs to obtain support from COST. Antonio made a presentation at the ExCo meeting in Berlin. He and Liviu will extend these ideas and present them to interested people at a special meeting in Kazan.

Finally, I would like to call your attention to an article about the Seventh International Conference on Low-Cycle Fatigue (LCF7) in this Newsletter. The event in 2013 is supported by ESIS and will be a German-French technical cooperation, with Tilmann Beck (DE) and Eric Charkaluk (FR) as LCF7 Executive Chairs. DVM (DE, www.dvm-berlin.de) who is organizer of LCF7 and SF2M (FR, www.sf2m.asso.fr) support this event. Both associations are linked to European umbrella associations being members of FEMS. In addition, DVM is linked to ESIS and ICF for many years.

ESIS is the European umbrella association in our field of activity. In addition to ECF conferences, we are glad to support direct European links. We encourage our members to create such platforms and participate in them. These platforms which are the result of technical topics may be seen as creating bonds between different European countries as in this example between Germany and France, as well as the Second Ukraine-Greek Symposium on Fracture Mechanics of Materials and Structures which took place in Lviv, Ukraine (October, 2011) indicating a sign of international understanding and cooperation.

Leslie Banks-Sills

WELCOME !

Dear colleagues,

The daily news and papers are flooded with reports and commentaries on the *financial crisis* of Europe. It appears that the historic idea of a united Europe has faded away in the awareness of many people, and the *international financial markets* will finally decide on its future. If it was like this, the perspectives for a united Europe would look dark, indeed. But there is a lot more behind it, and those who are old enough to remember or who are familiar with European history know about it. The European idea has overcome age-long hatred between European nations after the 2nd World War like that between the "*arch-fiends*" France and Germany, as students were still taught in the beginning of the 20th century. It has also overcome the antagonism between East and West and tore the Iron Curtain down.

The establishment of ESIS is one example among many others of this concept. Dominique François reminded us on the "*circumstances around the birth of ESIS*" in the Newsletter #47: "*EGF at its foundation was devoted, in the field of structural integrity, to the spreading of knowledge through meetings and summer schools, to the development of friendship of scientists and engineers and as a contribution to the European construction*". Let us proceed on this way! That is why I continued encouraging national groups to report on their history, presence and future. You will find reports by Spain and the UK in this Newsletter, and I hope that others will follow in the next issues.

From the beginning, the self-conception of ESIS has been to act as supranational brains trust for vital problems of structural integrity. Prof. Ciavarello wrote us an e-mail addressing this role with respect to the occurrence of cracks in the wings of the A 380. We decided to publish it in the Newsletter to spread it within the ESIS community.

We are still expecting technical papers of some of the 2010 awardees, and I hope to present them in #50. Instead, you will find a contribution by Prof. Huang Yuan, chairman of TC 8, on molecular dynamics as a response to my blog on IMECHANICA. My complaint that "*no reaction by the authors has yet come to any of them*" and my suspicion "*that publishing does not intend to contribute to science but just to increase the individual scoring of scientists*" has thus become groundless, fortunately. Promoting the discussion on fracture mechanics and

structural integrity is not only the aim of the blog contributions but, besides distributing information, also the intention of the ESIS Newsletter. Thus I hope that Prof. Yuan gives an example worthy of imitation.

Wolfgang Brocks

An e-Mail to the ExCo

Dear ESIS president and board,

you may have heard of the A380 cracks and serious problems. I have written a small note on imechanica blog,

http://imechanica.org/node/11898

and in particular in

http://imechanica.org/node/11898#comment-18359,

I have suggested to involve ESIS or FFEMS for special initiatives regarding this serious and strange problem, which reminds me of every innovation, which brings more need to study and increase of knowledge.

What can ESIS do? I see you have yourself a blog in Imechanica, so maybe you could invite all the ESIS members to first discuss this matter in my imechanica note as it contains already most present information, or in your blog, or you could create a "task force", I am not sure.

A similar proposal I made to FFEMS as a journal. But these are just rough ideas, you are certainly more appropriate to suggest a way forward to my idea.

In the meantime, I contact Boeing people and Airbus people that I know to be ready for possible discussion.

Prof. Ing. Michele Ciavarella.
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NATIONAL COMMITTEES

Spanish Group on Fracture

The Spanish Group on Fracture (*Grupo Español de Fractura,* GEF*)* was founded in February 1984, when Professor Manuel Elices and Professor Manuel Fuentes organised a gathering of more than 30 engineers and scientists at the Parador of Sigüenza in Guadalajara in Spain. The aim was to bring together their experience and knowledge in the field of fracture mechanics and to foster the formation of a specialised group for the first time in Spain.

GEF opening meeting at Sigüenza in 1984

From the beginning, the two professors were aware of the importance of enabling the GEF annual meeting to be open and thorough, and of fomenting dialogue and participation (in particular that of young researchers coming into the field), as well as encouraging keynote speeches given by world-renowned scientists and specialists. To help this exchange, all the papers accepted for presentation at the annual meeting are published in the *Anales de Mecánica de la Fractura* journal, edited by the Spanish Group on Fracture. This journal is freely available to researchers at the association website (www.gef.es).

Attendance at the annual GEF event has grown every year, as has the quality and impact of the papers given. The Spanish Society for Structural Integrity-Spanish Group on Fracture (*Sociedad Española de Integridad Estructural – Grupo Español de Fracture*, GEF-SEIE*)* was founded at the 20th annual general meeting, held in Benicasim in Spain in 2003. It has provided a boost to the project which has brought about parallel, and highly successful, activities such as best presentation and poster awards, a science photo contest, and a specialisation course held shortly before each event that benefits from the first-rank participants in the conference, and which is specially aimed at scholarship holders and PhD students. In addition, an annual prize for those individuals and organizations that have made a significant contribution to the field of structural integrity is awarded.

XXV GEF meeting at Sigüenza in 2008

The general objective of the GEF-SEIE is the enhancement of safety, durability and performance of structures, components and materials utilised in engineering. To achieve this objective, the GEF-SEIE fosters the generation and distribution of scientific and technical information in the field, and nurtures education and training – at all levels – in the materials associated with structural integrity. It is important to note the non-profit-making nature of all the activities organised by GEF-SEIE, which is only financed by contributions from its members.

At present, the GEF has 158 members from research centres and universities all around Spain, from Andalucía to Asturias, and from Extremadura to Valencia. Such a membership enables it both to serve as an advantaged forum for the communication and exchange of ideas and enable the carrying out of joint studies, with no similar organisation in the field of structural integrity – either in terms of geographical reach or member expertise – existing.

The board currently comprises Professor Antonio Martín-Meizoso (Chairperson), Jesús Manuel Alegre-Calderón, Alfonso Fernández-Canteli, Eugenio Giner-Maravilla, Maria Luisa Maspoch-Ruldua and José Zapatero Arenzana (Vice-chairpersons), David Cendón-Franco (Secretary) and José Fernández-Sáez (Treasurer).

The GEF-SEIE has a resolute international commitment and almost from its very beginning cooperates with other similar international associations, holding joint meetings periodically with like organizations from neighbouring countries like Portugal (Braga 1987, Mérida 1993, Luso 1996 and Porto 2010) and France (Aiguablava 1992). The GEF-SEIE is the primary Spanish organisation collaborating with the European Structural Integrity Society (ESIS) and the International Congress on Fracture (ICF),

and hosted the ECF 13 at San Sebastian in 1994.

The enthusiasm and hard work of all GEF-SEIE members – besides their youthfulness – ensures a fruitful future to our national society, and a promising collaboration and mutual support with ESIS. As past chairman of the Spanish Group on Fracture (2003-2010), and one of the people responsible for its transition from a consolidated group of (very) good friends to a settled scientific and technological association, I am proud to have served this group and collaborated with the pioneering idea of starting a Spanish group on structural integrity, brought by professors Elices and Fuentes almost 30 years ago.

Prof. Gustavo Guinea

ESIS and the UK

The organization of those interested in fracture and structural integrity in the UK had been unsatisfactory for some years. Some ten years ago the main rallying point was a Royal Society committee which, unfortunately, was disbanded. No suitable home could be found until the creation of FESI (Forum for Engineering Structural Integrity). This body is independent and is thriving and part of its function is to be the official link between the UK and ESIS. It organizes a series of short events, including workshops, throughout the year which are held in various parts of the country. (ESIS members have a 10% discount if they attend). There is a FESI Bulletin which can be found on www.fesi.org.uk which gives details of all the activities of FESI.

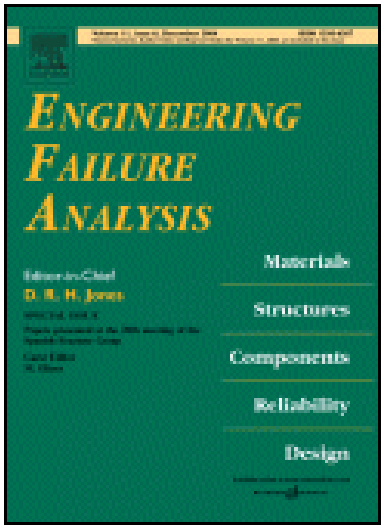
The UK group is a strong supporter of ESIS and welcomes the more positive recent approach to communication and particularly the newsletter. It also favours closer links with other national groups and Structural Integrity bodies.

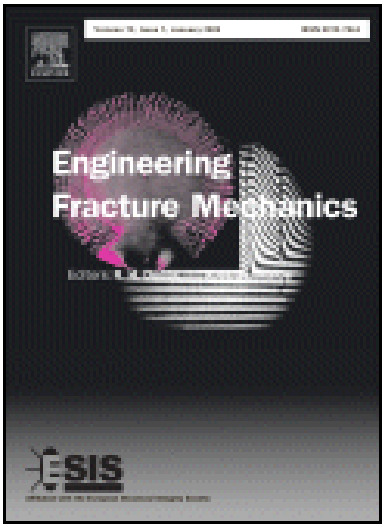
FESI collects the registration fees for ESIS with that of FESI and in 2011 there were 65 ESIS members in the UK. There are certainly many more that have an interest in the field and there will be efforts to increase the numbers this year.

Structural Integrity is an important activity for all of Europe and we in the UK are committed to fostering its developments. We value our links with ESIS which has provided a valuable forum for many years. May it long continue to do so.

Gordon Williams

3 Elsevier journals are affiliated with ESIS





Second Ukrainian-Greek Symposium

Fracture Mechanics of Materials and Structures
Lviv, Ukraine, October 3-7, 2011

The symposium was organized in accordance to the Agreement on scientific collaboration between the National Academy of Sciences of Ukraine (NASU) and the European Structural Integrity Society (ESIS), which has been signed on October 26, 2009 in Kyiv.

The main local organizers were Karpenko Physico-Mechanical Institute of NASU, Lviv Polytechnic National University, Paton Electric Welding Institute of NASU and Ukrainian Society on Fracture Mechanics. From the Greek side the co-organizers were Democritus University of Thrace, Xanthi and National Technical University of Athens. The chairmen of Symposium were Professors V.V. Panasyuk (Ukraine), E.E. Gdoutos (Greece) and Yu.Ya. Bobalo (Ukraine).

Participants of the symposium at Lviv Polytechnic National University

Over 50 participants participated in the symposium and thirty oral reports were presented, among them: 15 reports of Ukrainian scientists, 9 reports of Greek scientists, 4 reports of French scientists, including Prof. G. Pluvinage – the leader of scientific school in mechanics of materials of Paul Verlaine University (Metz) and also a report of Dr. W. Dietzel (Germany) – former Chair of ESIS TC10 "Environmentally Assisted Cracking" and Prof. J. Toribio – present Chair of ESIS TC10.

A book as collection of extended abstracts was printed and disseminated among the participants and guests of the symposium. It contains five chapters:

1. General problems of fracture mechanics and strength of materials and modern methods of defective structures control.
2. Methods for monitoring of deformations and damaging of materials at sharp stress concentrators – cracks in structural elements.
3. Environmental influence, in particular hydrogenous media, on strength of materials.
4. Behaviour of materials under extreme conditions of their operation.
5. Criteria for strength evaluation of deformable bodies with cracks.

In summary, the participants adopted the special resolution, which was endorsed by signatures of the symposium chairmen, Professors V.V. Panasyuk, E.E. Gdoutos and Yu.Ya. Bobalo. In this document the idea of organizing international specialists' symposia on problems of fracture mechanics of materials and structural integrity under ESIS auspices (each 2-3 years) was expressed. This proposal has been sent to the ESIS President, Prof. Leslie Banks-Sills, asking for approval and support.

Prof. V.V. Panasyuk,
Head of Ukrainian National Group of ESIS

TECHNICAL COMMITTEES

TC 1: Fracture Mechanics
TC 8: Numerical Methods

ESIS-Workshop on Computational and Experimental Failure Mechanics

BAM Berlin, Germany, June 14-15, 2012

The ESIS Technical Committees TC1 and TC8 will organise their annual meetings as a joint workshop on materials and failure mechanics. It is supposed to serve as a forum for in-depth discussion among colleagues in a small circle, who are interested in experimental techniques and computational modeling for materials and component failure.

Major **aims** of the workshop are

- to strengthen the dialogue and improve mutual comprehension among different research groups
- to find out new research focuses in failure mechanics and
- to define future activities within TC1 and TC8.

Relevant new experimental/computational methods, new material failure models and methods for component assessment shall be dealt with in this workshop.

Specific Topics are:

- Micro/meso-scopic modeling of ductile material failure
- Multi-scale modeling of fracture and fatigue

- Fracture and damage mechanics for various applications including fatigue crack propagation and mixed mode cracking
- Concepts for fracture and fatigue assessment of components

Prospective authors are invited to submit a one-page abstract of contributions for oral presentations **before March 10, 2012**.

The workshop language will be English. Participation in the workshop is free. Authors of accepted contributions will have the opportunity for oral presentations. There will be amble time for detailed discussions. To enhance discussion and informal exchange of ideas, attendance will be limited to about 50 persons. Selected papers will be published in an international journal after peer review.

Please send confirmation of participation with a title of your presentation as soon as possible to: blucha@uni-wuppertal.de .

Prof. Dr.-Ing. H. Yuan

Prof. Dr.-Ing. U. Zerbst

TC 2: Micromechanisms

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TC 3: Fatigue of Engineering Materials and Structures

Activities during 2012-2013

(a) Professor Ewald Macha (Opole): Organization of a Special Session on "Multiaxial Fatigue and Fracture" at the 19th European Conference on Fracture – ECF19, to be held in Kazan, Russia, 26th to 31st August, 2012.

(b) Professor Andrea Carpinteri (Parma) and Professor Les P. Pook (London): Chairmen of the 4th International Conference on Crack Paths (CP 2012), to be held in Italy, 19th to 21th September, 2012.

(c) Professor Andrea Carpinteri (Parma), Professor Francesco Iacoviello (Cassino), Professor Les P. Pook (London) and Professor Luca Susmel (Sheffield): Guest Editors of a Special Issue on "Fatigue Crack Paths" of the "International Journal of Fatigue", and Guest Editors of a Special Issue on "Crack Paths" of the International Journal "Engineering Fracture Mechanics", with papers selected from those presented at the 4th International Conference on Crack Paths – CP 2012, to be held in Gaeta, Italy, 19th to 21th September, 2012.

(d) Professor Andrea Carpinteri (Parma), Professor Masao Sakane (Ritsumeikan, Japan) and Professor Shan-Tung Tu (Shanghai, China): Chairmen of the 10th International Conference on Multiaxial Fatigue and Fracture (ICMFF10), to be held in Kyoto, Japan, 3rd to 6th June, 2013.

(e) Professor Andrea Carpinteri (Parma), Professor Masao Sakane (Ritsumeikan, Japan) and Professor Shan-Tung Tu (Shanghai, China): Guest Editors of a Special Issue on "Multiaxial Fatigue Models" of the "International Journal of Fatigue", and Guest Editors of a Special Issue on "Multiaxial Fracture" of the International Journal "Engineering Fracture Mechanics", with papers selected from those presented at the 10th International Conference on Multiaxial Fatigue and Fracture – ICMFF10, to be held in Kyoto, Japan, 3rd to 6th June, 2013.

Profs Andrea Carpinteri, Les P. Pook

Subcommittee 3.1 on Multiaxial Fatigue

13th Conference on Fracture Mechanics,

Opole, 05-07 September 2011

The 13th CFM was held between 05-07 September 2011 on the premises of the Opole University of Technology. It was a continuation of series of conferences started in 1987 in Kielce, Poland. Chairman of the Polish Group of Fracture Mechanics and mentor of these conferences is Prof. Andrzej Neimitz from the Department of Machine Design, Kielce University of Technology.

The organizer was the Centre of Structural Integrity at the Department of Mechanics and Machine Design of the Mechanical Engineering Faculty and the Opole Branch of the Polish Society of Theoretical and Applied Mechanics under the auspices of the European Structural Integrity Society. The Conference received financial support from the Polish Ministry of Science and Higher Education.

The International Scientific Committee consisted of 38 researchers. The Organizational Committee consisting of Prof. Ewald Macha – Chairman, Associate Prof. Dariusz Rozumek – Secretary, Dr. Zbigniew Marciniak, Dr. Roland Pawliczek, Joanna Drozd and Magdalena Filipek was responsible for the efficient course of all matters at the conference. 43 persons participated in the conference, and 48 papers by 94 authors from 20 countries were delivered.

In the opening ceremony Prof. Marek Tukiendorf, Vice Rector for Science presented activities in teaching and scientific research of OUT with special regard to international co-operation.

The conference programme was divided into six plenary sessions, eight thematic sessions and a poster session.

The aim of the conference was to share information and facilitate collaboration regarding fracture mechanics, damage and fatigue of materials and also dissemination of current research in this field. The conference provided a platform for a multi-disciplinary approach towards design, construction and exploitation of machines and devices under service loading and for lifetime prediction. It covered the following topics:

- Experimental methods in fracture mechanics;
- Computational, analytical and numerical methods;
- Multiscale modeling of fracture mechanics;
- Influence of microstructure on fracture;
- Fatigue fracture;
- Composite fracture;
- Influence of environment (temperature and aggressive media) on cracking course;
- Dynamic problems in fracture mechanics;
- Practical applications of fracture mechanics;
- Other problems connected with fracture.

All abstracts of papers presented at the conference and at the poster session were published in a book entitled: Scientific Papers of the Opole University of Technology, Mechanics iss. 343, vol. 99, Opole, Eds. D. Rozumek & E. Macha, 2011, pp. 134. At present, editorial work is ongoing to ensure publication of the papers in national and foreign journals with high impact.

A guided walking tour of Opole took place on the second day of the conference. The route led through the most characteristic and picturesque spots in the old town. The guests got to know some key facts about the history of Opole from its foundation until today.

A dinner at the Venezia Restaurant located in the city centre created an excellent opportunity to taste regional cuisine and local delicacies. Traditional Polish folk dances and songs were presented to the guests on the other evening performance of the Dance and Song Group OPOLE in the Local Youth Community Centre.

On the last day of the conference, the participants were taken for a day tour to Moszna Castle. Located in the southwest part of Poland, about 30 km from Opole, the 17th century castle and park complex is reminiscent of the English castles from the Elizabethan period the former residence of the German Tiele-Winckler family. The castle functions as a hotel with an equestrian centre offering English thoroughbred horses for rides.

The Chairman and the Scientific Council of the Polish Group of Fracture were elected during the conference, who will serve a two-year term ending in 2013. Prof. Andrzej Neimitz from Kielce University of Technology was again elected chairman. Members of the Scientific Council became:

1. Dariusz Boroński from the University of Technology and Life Sciences in Bydgoszcz
2. Dorota Kocańda from the Military University of Technology
3. Ewald Macha from the Opole University of Technology
4. Tadeusz Niezgodziński from the Technical University of Łódź
5. Jerzy Okrajni from the Silesian University of Technology in Katowice
6. Dariusz Rozumek from the Opole University of Technology
7. Janusz Sempruch from the University of Technology and Life Sciences in Bydgoszcz
8. Andrzej Seweryn from the Białystok University of Technology
9. Józef Szala from the University of Technology and Life Sciences in Bydgoszcz
10. Krzysztof Werner from the Częstochowa University of Technology

The next 14th Conference on Fracture Mechanics will be held in the year 2013 in Kielce. On behalf of the Organizers we would like to invite you to take part in it.

Prof. Ewald Macha

Opole University of Technology

TC 10: Environmentally Assisted Cracking

On 3rd of October 2011 a Meeting of ESIS TC10 on Environmentally Assisted Cracking (EAC) and of the Subcommittee on Hydrogen Degradation was held at Lviv National Technical University (Ukraine) in conjunction with the Second Ukrainian-Greek Symposium on Fracture Mechanics of Materials and Structures from 3rd to 7th of October.

The TC 10 Chairman, Prof. Jesus Toribio, University of Salamanca, Spain, opened the meeting which comprised the following presentations:

- 20 Years ESIS TC10 on Environmentally Assisted Cracking - what was achieved, what remains to be done? (Dr. W. Dietzel, Helmholtz-Zentrum Geesthacht, Germany).
- State of a realization of the Agreement on Cooperation between the National Academy of Sciences of Ukraine (NASU) and ESIS and the activity of Ukrainian-Polish-German Summer Schools on Fracture Mechanics

(Prof. H.M. Nykyforchyn, Karpenko Physico-Mechanical Institute of the NASU, Lviv).

- The future activities of ESIS TC10 "EAC" and of the Subcommittee on "Hydrogen Degradation" (Profs. J. Toribio and H.M. Nykyforchyn).

Dr. W. Dietzel talked about the history of the TC, which was launched in April 1990 with a first Workshop on "Environmentally Assisted Cracking" which had been initiated by the GKSS Research Centre in Geesthacht, Germany, and was followed by the foundation of the Sub-committee on "Hydrogen Degradation" in 1995, following an initiative by the members of the Karpenko Physico-Mechanical Institute of the National Academy of Sciences of Ukraine (KPMI). Dr. Dietzel reminded the audience that the main objective of ESIS TC10 was - and continues to be - a merge of research experience in the areas of fracture mechanics and of environmental degradation/corrosion of materials. From the very beginning, the work of TC10 and of its Sub-Committee was focused on the development of innovative methods for testing of SCC, on the elaboration of guidelines for controlling SCC, supported by the European Commission, and on organising very successful and fruitful workshops devoted to problems of EAC and on supporting and co-sponsoring EAC related conferences. In addition to these tasks, in the future the participation in existing networks such as technical associations and Working Parties and the formation of new networks should play an important role in the work of the TC.

Group of participants at the TC10 meeting in Lviv

Prof. H.M. Nykyforchyn informed about the state of realization of the Agreement on Cooperation between the NASU and ESIS, which was signed in Kyiv on October 26, 2009 by the ESIS President (2006-2010), Prof. E. Gdoutos, and the NASU President, Prof. B.E. Paton. The Program of scientific and technical cooperation for the years 2009-2014 includes several items, the main is the organisation of Ukrainian-Greek Symposia on Fracture Mechanics of Materials and Structures (FMMS). The first such Symposium was organised in Xanthi, Greece, October 20-23, 2010, with a strong focus on hydrogen degradation from the Ukrainian side. Ten speakers from Ukraine participated in the Symposium where the Greek side covered the costs of accommodation and living for the Ukrainian colleagues. The 2nd FMMS was organized in Ukraine with the same conditions for the Greek participants.

Special attention was paid to the recently held 12th Polish-Ukrainian-German Summer School (SS) on Fracture Mechanics, which was held from 18th to 23rd September, 2011, at Warsaw University of Technology, Poland in conjunction with the Symposium "Mechanical Properties of Nanomaterials – Experiments and Modelling" of EMRS Fall Meeting 2011. This SS has ESIS status in Central and Eastern Europe following a decision of the ESIS Council on 12th September, 2002, in Cracow, Poland. 39 participants, including 21 from Poland, 14 from Ukraine, three from Austria and one from Germany were present. Further, the Symposium was open to the participants of the SS who presented recent achievements in deformation and fracture of nanomaterials. During the meeting it was tentatively agreed that the next, i.e. the 13th SS will be held in 2013 and will be hosted by the Wroclaw University of Technology, Poland. More information about the SS 2011 can be found in the note "The 12th Polish-Ukrainian-German summer school on fracture mechanics and strength of materials", published in the Journal "Physicochemical Mechanics of Fracture", 2011, no 5, pp. 130-132.

Prof. J. Toribio imparted to the participants of the Lviv meeting potential future activities of TC10. The main tasks for 2012 would be to organise one or more special session(s) on EAC during ECF19 in Kazan and for 2013 to organise a workshop on EAC problems. As possible places for this workshop, Porto Marghera/Venice, Italy, and Salamanca, Spain, were considered.

J. Toribio

H.M. Nykyforchyn

W. Dietzel

TC 24: Integrity of Railway Structures

A meeting of TC 24 will be held in Milan on 29th-30th March, 2012. The main topic of the meeting will be to present the results of a PoliMi project named MARAXIL ('Manufacturing Railway Axles with Improved Lifetime') funded by Regione Lombardia. Within this research project, conducted in cooperation with IWM Freiburg (Dr. M. Luke) and LucchiniRS - Lovere, improvements in propagation lifetime induced by coldrolling is addressed. In particular the results will be presented in terms of:

i) a joint crack propagation database on A4T steel;

ii) FE simulation of the cold rolling process and comparison with residual stress measurements;

iii) estimation of improved propagation lifetime and comparison with full-scale experiments.

The presentation of MARAXIL results will also be the opportunity for the 'railway structural integrity' community to meet again after the previous successfull TC 24 meetings held in Berlin (October 2010) and London (March 2011) and to discuss the adavance in other ongoing cooperative projects (WOLAXIM, EURAXLES, SUSTRAIL). The provisional list of presentations includes:

- Vibration transmission due to a rail discontinuity causing excessive wear and surface waviness in subway rails (H.P. Rossmanith, TU Wien)
- Consolidation of a material database for axle crack growth calculations (M. Luke and D. Regazzi, IWM and PoliMI);
- Effect of rolling on axle life prediction (M. Carboni et al., PoliMi and IWM);
- New detection method for axle corrosion (J. Rudlin and A. Raude, TWI);
- Early phase of corrosion-fatigue damage in A1N (S. Beretta and A. Loconte, PoliMi);
- Some aspects of safe-life and damage tolerant design of railway axles (U. Zerbst, BAM);
- A comparison of SIF calculations for an axle (M. Sander, Rostock University);
- POD and definition of a new calibration sample for axles (PoliMi, LucchiniRS and Gilardoni);
- Discussion on the definition of axle fatiguelimits and K_f factor (S. Cervello, LucchiniRS);
- Updates of the ongoing cooperative projects (Euraxles, WOLAXIM, SUSTRAIL and others).

Stefano Beretta

CALENDAR OF TC MEETINGS

TC 1 **TC 8**	14th-15th June, 2012	ESIS-Workshop on Computational and Experimental Failure Mechanics	BAM Berlin, Germany	Uwe Zerbst Huang Yuan blucha@uni-wuppertal.de
TC 2	2nd-3rd April, 2012	8th ESIS/FESI joint meeting	Mansfield College, Oxford, UK	http://energy.materials.ox.ac.uk/Meetings/esis-tc2-oxford.html.
TC 11	15th-16th May, 2012	61th Committee Meeting in conjunction with QA Workshop Part 2	Barnwood, Gloucester, UK	Malcolm S Loveday malcolm.loveday@np.co.uk
TC 24	29th-30th March, 2012.	Committee Meeting	Milano, Italy.	stefano.beretta@polimi.it

CONFERENCES

LCF 7

The 7th International Conference on Low Cycle Fatigue (LCF7) is scheduled to be held in Aachen, Germany from September 9-13, 2013. It is the seventh in a successful series initiated by K.-T. Rie and E. Haibach.

LCF1 Stuttgart 1979 K.-T. Rie (DE), E. Haibach (DE)

LCF2 Munich 1987 K.-T. Rie (DE), H. Nowack (DE)

LCF3 Berlin 1992 K.-T. Rie (DE), H. Nowack (DE)

LCF4 Garmisch 1998 K.-T. Rie (DE), P.D. Portella (DE)

LCF5 Berlin 2003 P.D. Portella (DE), H. Sehitoglu (US), K. Hatanaka (JP)

LCF6 Berlin 2008 P.D. Portella (DE), T. Beck (DE), M. Okazaki (JP),

LCF7 Aachen 2013 T. Beck (DE), E. Charkaluk (FR)

This series of events aims to provide a discussion forum for all those interested in both fundamental aspects and practical applications of low cycle fatigue and similar subjects. A special emphasis lies in the design, manufacturing and operation of equipment and structures. We hope to resume the successful series of previous conferences and intend to:

- Bring together experts in several fields with a common interest in low cycle fatigue, facilitating and encouraging mutual exchange of knowledge and experience;

- Provide a forum for the presentation and the discussion of recent advances;
- Help identifying research and development needs in the future.

Invited lectures and oral contributions will cover topics like:

- Isothermal LCF: general aspects
- Multiaxial loading
- Interaction between creep, LCF and HCF
- Thermal and Thermo-mechanical fatigue, TMF
- Fretting fatigue
- Damage; crack initiation and growth
- Microstructural aspects
- Influence of environmental conditions
- Surface modification technologies; coatings
- Experimental aspects; standardization; quality assurance
- Materials related topics: Fe alloys, steels, cast iron / Ni alloys / Ti alloys / Al alloys / Mg alloys / composite materials / ultrafine grained materials
- Design methods; life prediction and remaining life estimation
- Case studies: energy conversion, nuclear plants, structures

LCF7 will be held under the auspices of FEMS and is kindly supported by ESIS, ICF:WASI, ASTM International, SF2M (FR), IGF (IT) and FESI (UK). The Conference is organized by DVM German Association for Materials Research and Testing: www.dvm-berlin.de .

Our call for papers will be published soon and we are hoping for a good response by inviting ESIS members to submit abstracts.

March 2012	Call for Papers
September 2012	Deadline for Abstract Submission
November 2012	2nd Circular
March 2013	Tentative Programme
June 2013	Final Programme

More information can be found at the conference website www.lcf7.de .

Tilmann Beck and Eric Charkaluk

LCF7 Executive Chairs

FraMCoS-8

The 8th International Conference on Fracture Mechanics of Concrete and Concrete Structures is scheduled to be held in Toledo, Spain, from March, 10-14, 2013.

Conference web-site: www.framcos8.org

Sponsoring organizations: UCLM, University of Castilla - La Mancha, European Structural Integrity Society (ESIS), SEIE-GEF, Spanish Structural Integrity Society

Conference Topics

A. Recent advances in fracture mechanics of concrete
B. Fracture and cracking behavior of reinforced and prestressed concrete structures
C. High-performance, high strength concretes and FRC
D. Advances in structural design codes
E. Structural monitoring and assessment
F. Repair and retrofitting, practical applications
G. Durability and corrosion-induced cracking
H. Interface fracture and debonding phenomena
I. Constitutive relations, time-dependent effects, cyclic and fatigue behavior
J. Brick masonry, concrete-like and quasi-brittle materials.

Key Dates and Deadlines

March 1, 2012	Proposals for organized sessions (via web)
March 15, 2012	Submission of abstracts (via web)
April 30, 2012	Preliminary acceptance to authors.
September 15, 2012	Submission of complete camera-ready manuscripts (via web)
December 15, 2012	Notification of final acceptance.
March 10-14, 2013	Meeting at Real Fábrica de Armas, Toledo.

Organized Sessions

In FraMCoS-8 conference, in addition to the individual submission of papers within the overall themes of the conference, experts are encouraged to organize sessions in advance on their specific topics. Each session organizer is expected to recruit about 6 - 8 papers for a session and serves as chairperson. Prospective session organizers are recommended to submit the session outline including the title of the session, and the titles and authors of the papers, through the conference web site.

To submit your proposal you have to be previously registered in the conference data base (access here). Thereafter please access your personal record and submit the proposal (.pdf file) through the *"Add a proposal for an Organized Session"* area.

A preliminary list of the Organized Sessions planned follows:

- Control of Cracking in RC structures: coupling phenomena and crack indicators – Jacky Mazars. Jacky.mazars@inpg.fr
- Durability characterization and modeling of multiple cracked strain hardening cementitious composites(SHCC)- Michael Lepech. mlepech@stanford.edu
- Dynamic response of concrete in tension-experimental evidence and modeling. Jaap

Weerheijm & Josko Ozbolt.
J.weerheijm@tudelft.nl;
ozbolt@iwb.uni-stuttgart.de

- Fracture mechanics prediction of durability of concrete. Hans Reinhardt. Reinhardt@iwb.uni-stuttgart.de
- Multi-scale investigation of concrete fracture by numerical and physical experimentation. Peter Grassl, Gianluca Cusatis & John Bolander. Peter.grassl@glasgow.ac.uk
  Gianluca.custis@gmail.com;
  jebolander@ucdavis.edu
- NDT/AE applications on concrete and concrete structures. Masayasu Ohtsu, Christian Grosse & Eric N. Landis. Ohtsu@gpo.kumamoto-u.ac.jp;
  Grosse@cbm.bv.tum.de;
  landis@maine.edu
- Nonlocal computational methods for cementitious materials. Walter Gerstle. gerstle@unm.edu
- Recent advances in numerical modeling of cohesive fracture in concrete-like materials. Zhenjun Yang. Zhenjun.Yang@manchester.ac.uk
- Strengthening of RC beam-column joints. Appa Rao Gangolu. garao@iitm.ac.in

Plenary Speakers

Carmen Andrade, Instituto Eduardo Torroja, Madrid, Spain: Probalisitic Treatment of Rebar Depassivation and its Influence in the Calculation of the Structural Limit States.

Alberto Carpinteri, Politecnico de Torino, Turin, Italy: Failure Mode Scaling Transitions in RC Beams in Flexure: Tensile, Shearing, Crushing.

Stephen Foster, University of New South Wales, Sydney, Australia: High Performance Fibre Reinforced Concrete: Fundamental Behaviour and Modelling.

Francois Hild, LMT Cachan, France: On the Use of 3D Images and 3D Displacement Measurements for the Anaysis of Damage Mechanisms in Concrete-Like Materials.

Victor Saouma, University of Colorado, Boulder, USA: Applications of Fracture Mechanics in Dams Engineering.

Jan G. M. van Mier, FraMCoS President, The Netherlands: Recent Advances in the Understanding of Compressive Fracture of Concrete

The 19th European Conference on Fracture will take place in Kazan, Russia, from August 26th to 31st, 2012, see
http://www.ecf19.ru/

Deadlines

Early Registration	15 March, 2012
Submission of Full Papers	15 April, 2012

20th European Conference on Fracture

30th June 30 - 4th July, 2014
Trondheim, Norway

http://www.ecf20.no/

Call for proposals to organize the next European Conference on Fracture ECF21 (2016)

This call for proposals to host ECF21 (2016) is open to every European scientific research team active in Structural Integrity. The proposal shall be e-mailed to the President of ESIS six weeks before ECF19 (the deadline is July 15, 2012 for the 2016 conference). The proposal will then be mailed to all the ESIS Council members and TC-chairman. A presentation will be made at the ESIS Council meeting at Kazan with the final choice of the venue made by the Council. The venue will be announced at the Banquet.

For any more information, please contact:

Leslie Banks-Sills
banks@eng.tau.ac.il
President of ESIS,
James Marrow
james.marrow@materials.ox.ac.uk
Secretary of ESIS.

13th International Conference on Fracture

May 26-31, 2013
Beijing, China

www.icf13.org/

14th International Conference on Fracture

ICF 14

May 7-12, 2017
Rhodes, Greece

Executive Chair:
Professor Emmanuel Gdoutos
egdoutos@civil.duth.ge

Technical Programme Co-Chair:
Prof. James Marrow,
james.marrow@materials.ox.ac.uk

International Steering Committee:
Professor D M R Taplin
coliemore@hotmail.com

CALENDAR OF CONFERENCES

March 3rd, 2012	FESI CPD Seminar: Modelling Fracture in Quasi-Brittle Materials	University of Manchester, UK	e-mail: poul.gosney@fesi.org.uk
March 24th-25th, 2012	3rd Int. Conf. on Manufacturing Science and Engineering (**ICMSE 2012**)	Xiamen, China	http://www.icmse.net
April 23rd-27th, 2012	Advanced Materials Modelling for Structures	Paris, France	e-mail: serge.kruch@onera.fr
April 30th - May 4th, 2012	**ICCES12**	Crete, Greece	ices@icces.org
May, 11th-12th, 2012	Int. Conf. on Metallurgy Technology and Materials (**ICMTM 2012**)	Jeju Island, South Korea	http://www.icmtm.org/home.html
May 15th, 2012	FESI CPD Seminar: Corrosion Fatigue Developments	NPL Teddington, London, UK	http://www.fesi.org.uk
May 15th-16th, 2012	Int. Workshop on Quality Assurance in Mechanical Testing Laboratories (**QAMTL**)	EDF Energy, Gloucester, UK	www.htmtc.com
June 1st-2nd, 2012	Int. Conf. on Electronic and Materials (**ICEM 2012**)	Shanghai, China	http://www.hkimss.org/icem2012/index.htm
June 25th-27th, 2012	Int. Conf. on Damage Mechanics (**ICDM**)	Belgrade, Serbia	http://www.icdm.rs e-mail: info@icdm.rs

June 24th-28th, 2012	15th European Conf. on Composite Materials (**ECCM 15**)	Venice, Italy	www.eccm15.org
July 1st-4th, 2012	5th Int. Conf. on Engineering Failure Analysis (**ICEFA V**)	Hilton Hotel, The Hague, Netherlands	www.icefaconference.com/ e-mail: w.zhao@elsevier.com
July 1st-5th, 2012	IUTAM Symp. Fracture Phenomena in Nature and Technology	Brescia, Italy	http://events.unitn.it/en/iutam2012
July 6th-8th, 2012	2nd Int. Conf. on Advanced Engineering Materials and Technology (**AEMT 2012**)	Zhuhai, China	**www.icaemt.org**
July 8th-13th, 2012	10th World Congress on Computational Mechanics (**WCCM 2012**)	São Paulo, Brazil	www.wccm2012.com
July 9th-13th, 2012	8th European Solid Mechanics Conf. (**ESMC 2012**)	Graz, Austria	www.esmc1012.tugraz.at e-mail: bettina.strametz@tugraz.at
July 23rd-27th, 2012	Junior Euromat	Lausanne, Switzerland	www.fems.org/awards/index.php
August 26th-31st, 2012	19th European Conf. on Fracture (**ECF 19**)	Kazan, Russia	www.ecf19.ru e-mail: ecf19@acadenergo.ru
August 27th-31st, 2012.	38th Solid Mechanics Conference (**SolMech 2012**),	Warsaw, Poland	http://solmech2012.ippt.gov.pl/
September 3rd -7th, 2012	33rd Risoe Int. Symp. on Materials Science, "Nanometals – Status and Perspective"	DTU, Roskilde, Denmark	http://www.vindenergi.dtu.dk/Conferences/symp33.aspx
September 10th -14th, 2012	6th European Congress on Computational Methods in Applied Sciences and Engineering (**ECCOMAS 2012**)	Vienna, Austria	http://eccomas2012.conf.tuwien.ac.at
September 16th-21st, 2012	9th Int. Conf. on Fatigue Damage of Structural Materials	Hyannis, MA, USA	http://www.fatiguedamageconference.com/index.html
September 19th-21st, 2012	4th Int. Conf. on Crack Paths (**CP 2012**)	Italy	http://www.CP2012.unipr.it
November 7th-11th, 2012	Cellular Materials (**CELLMAT 2012**)	Int. Congress Center Dresden, Germany	www.conventus.de e-mail: anja.kreutzmann@conventus.de
November 9th-15th , 2012	**ASME 2012** Int. Mechanical Engineering Congress	Houston, Texas, USA	imece@asme.org
November 13th-14th, 2012	Int. Workshop on Quality Assurance in Mechanical Testing Laboratories (**QAMTL**)	Inco Test, Hereford, UK	www.htmtc.com
December 3rd-5th, 2012	6th Int. Conf. on Coupled Instabilities in Metal Structures (**CIMS 2012**)	Univ. Strathclyde, Glasgow, UK	http://www.cims2012.org
December 5th-7th, 2012	1st Int. Conf. on Performance-Based and Lifecycle Structural Engineering *(***PLSE 2012***)*	Hong Kong, China	http://www.polyu.edu.hk/fclu/PLSE2012 e-mail: clplse@inet.polyu.edu.hk
March 10th-14th, 2013	8th Int. Conf. on Fracture Mechanics of Concrete and Concrete Structures (**FraMCoS-8**)	Toledo, Spain	http://www.framcos8.org
May 26th –31st, 2013	13th Int. Conf. on Fracture (**ICF13**)	Beijing, China	http://www.icf13.org

June 3rd-7th, 2013	Aeronautical Fatigue and Structural Integrity (**ICAF**)	Jerusalem, Israel	e-mail: abrot@iai.co.il
June 12th-14th, 2013	4th Int. Conf. on Computational Methods in Structural Dynamics and Earthquake Engineering (**COMPDYN 2013**)	Island of Kos, Greece	http://www.compdyn2013.org.
June 16th-20th, 2013	11th Int. Conf. on Structural Safety and Reliability (**ICOSSAR 2013**)	Columbia University, New York City, USA	www.civil.columbia.edu/icossar2013
September 9th-13th, 2013	7th Int. Conf. on Low Cycle Fatigue (**LCF7**)	Aachen, Germany	www.lcf7.de

APPLICATION OF MD FOR COHESIVE ZONE MODELING

Prof. Dr. H. Yuan
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University of Wuppertal
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A discussion with Professor Wolfgang Brocks

For many years the molecular dynamics (MD) has been introduced to model deformations and damage mechanisms of single crystals and polycrystals. A common problem is the dimension of the MD model, the dimension of such computational models is by far below 1 micron^3. The small dimension causes many other limitations on modeling, e.g. reflection of dislocations, interactions with boundaries, etc., so that these simulations cannot predict the properties of engineering metals. Bridging different length scales is still a difficult task in materials simulation and quantitative studies of materials damage at nano-scale are still an open issue. In this sense, it is absolutely correct to be skeptic to directly compare MD simulations with macroscopic, even microscopic behavior of materials.

However, it is often not the goal of these works to catch the real metal property, but to find interdependence of different field variables. With help of this kind of computations, one may find new ideas which cannot be measured in laboratory and observed under modern SEM/TEM. Computational experiments in a nano-scale model could provide new evidences for description of micro-scale even meso-scale material behavior. In this sense these scientists are not ignorant of physics behind the reality, but they are trying to consider the problem in a different way.

In the paper (*H. Krull and H. Yuan: Suggestions to the cohesive traction–separation law from atomistic simulations. Engineering Fracture Mechanics, Vol. 78, 2011, pp. 525-533*) we have studied the fracture mechanism in nano-scale to provide qualitative implication for formulating a cohesive law. The values from MD like cohesive strength and critical separation, of course, are much too high and low, respectively, for continuum models. But the internal correlation among different variables is of interest and can provide fresh ideas for formulating a cohesive zone model.

The cohesive zone is a strong simplification of the damage zone around a crack tip, which can neither be measured nor observed in real materials. However, it should contain nano-, micro and meso-scopic processes happened around the crack tip. It is certainly a meaningful way to study the failure process based on debonding and continuum mechanics models. If a fine grained material, e.g. fine grained Nickel superalloy, with grain size between 1 to 10 microns, the applicability of the conventional continuum plasticity becomes an open issue. In nano-srystalline the crystal plasticity could even be too coarse. The MD simulation cannot reach the dimension of whole grains, but can provide the characters of subgrains. At least, it will generate new information from the small scales. Additionally, the simulation of debonding is based on an additional model, which may affect the final results significantly.

The agreement with the exponential law of Needleman cannot simply be taken as the direct consequence of the MD modeling. The predicted damage process in nanoscale substantially depends on MD model. The model of Needleman is directly derived from simple atomistic calculations of interfacial separation, whereas the present MD computations considered effects

of deformations and degradations around the crack tip. The cohesive zone should contain influence of stress gradients, stress triaxiality and discrete damage process around the crack tip. In this sense, the cohesive law from MD simulation is various and sensitive to evaluation of numerical results. Our work developed a reasonable averaging method and has shown that the cohesive law has a similar form as the exponential function suggested by Needleman, but only for steady crack growth. Crack initiation is somehow different. Moreover, it is shown that this exponential law is also valid for single-crystal materials without interface, which is beyond the assumption of NEEDLEMAN.

Regarding to nucleation of crack, Professor Brocks focuses on void nucleation and coalescence in ferretic alloys, described in the Gurson-Tvergaard-Needleman model. This consideration is certainly not the sole mechanism for metal failure and not contradictory to our computation for a cracked fcc crystal. In the paper MD was used for studying crack growth in a single crystal. The crack under mode I shows that voids may be nucleated due to high stress triaixiality and may coalescence with each other. Phenomenologically the nano-event is similar to meso-observations, but from different origins. Whether or not the nano-scale failure runs in this form has to be verified in futural experiments.

If one uses cohesive zone model, he is trying to separate plastic deformations from material damage. That is, the plastic deformations of the material should be described by the plasticity model, and the material failure should be considered in the cohesive zone, representing the simplified damage zone, which is additionally described by the cohesive law (or the traction-separation-law). Under mode I loading condition, the traction responsible for void nucleation is the tensile stress ahead of the crack tip, as predicted in the MD computations, while the metallic plastification is characterized - by the Mises stress. This consideration is confirmed in the MD simulations. This is the significant difference from continuum damage mechanics, in which damage and deformation should be described in a set of evolution equations. This is not *the final death sentence to any* other *simulation*, but could be a new starting point for further investigations of the influence of stress triaxiality to the cohesive law.

In MD simulations the plasticity is considered in the form of nucleation and motion of dislocations and cannot be excluded in computations. In the present work, however, the large amount of dislocations is suppressed by the rigid boundaries of the specimen, so that the crack initiation and propagation are along in the symmetric plane. If the crack is located in a (100) plane of the fcc lattice, crack propagates without significant dislocations. However, if the crack is located in a (111) plane, dislocations are observed and plasticity plays a role. Due to the reflection of dislocations at the boundaries of the simulation model, however, the stress field at the crack tip is influenced by these dislocations, so that an explicit investigation becomes more difficult.

ESIS Procedures and Documents
(free available for ESIS Members at www.structuralintegrity.eu)

Two kinds of documents are produced by ESIS Technical Committees with the following designatory system: ESIS P2-92 or ESIS P4-92D, where:

1. P means "Procedure", and 2 and 4 are the current numbers, while 92 is the year of issue.
2. D following the year (eg: 92D) means "draft", ie: not yet approved, while
3. D prior to the year (eg: D1-92) means "Document" other than test methods.

P1-92 **ESIS RECOMMENDATIONS FOR DETERMINING THE FRACTURE RESISTANCE OF DUCTILE MATERIALS.** Responsible body: TC1 Subcommittee on Fracture Mechanics Testing Standards.
P2-92 **ESIS PROCEDURE FOR DETERMINING THE FRACTURE BEHAVIOUR OF MATERIALS.** Responsible body: TC1 Subcommittee on Fracture Mechanics Testing Standards.
P3-03D **DRAFT UNIFIED PROCEDURE FOR DETERMINING THE FRACTURE BEHAVIOUR OF MATERIAL.** Responsible body: TC1 Subcommittee on Fracture Mechanics Testing Standards (UNDER PREPARATION NOT AVAILABLE).
P4-92D **ESIS RECOMMENDATIONS FOR STRESS CORROSION TESTING USING PRE-CRACKED SPECIMENS.** Responsible body: TC10 Committee on Environmental-Assisted Cracking.
P5-00/VAMAS **PROCEDURE FOR DETERMINING THE OF FRACTURE TOUGHNESS OF CERAMICS USING THE SEVNB METHOD .** Responsible body: TC6 Committee on Ceramics.
P6-98 **ESIS PROCEDURE TO MEASURE AND CALCULATE MATERIAL PARAMETERS FOR THE LOCAL APPROACH TO FRACTURE USING NOTCHED TENSILE SPECIMENS.** Responsible body: TC8 Committee on Numerical Methods.
P7-00 **ESIS PROCEDURE FOR DYNAMIC TENSILE TESTS** Responsible body: TC5 Subcommittee on Dynamic Testing at Intermediate Strain rates.
P8-99D **ESIS DRAFT CODE OF PRACTICE FOR THE DETERMINATION AND INTERPRETATION OF CYCLIC STRESS-STRAIN DATA.** Responsible body: TC11 Committee on High Temperature Mechanical Testing.
P9-02D **GUIDANCE ON LOCAL APPROACH OF RUPTURE OF METALLIC MATERIALS.** (UNDER PREPARATION NOT AVAILABLE).
P10-02 **A CODE OF PRACTICE FOR CONDUCTING NOTCHED BAR CREEP RUPTURE TESTS AND INTERPRETING THE DATA.** Responsible body: TC11 High Temperature Mechanical Testing Committee.
P11-02 **TECHNICAL RECOMMANDATIONS FOR THE EXTREME VALUE ANALYSIS OF DATA ON LARGE NONMETALLIC INCLUSIONS** Responsible body: TC20 Committee on Inclusions.
D1-92 **FRACTURE CONTROL GUIDELINES FOR STRESS CORROSION CRACKING OF HIGH STRENGTH ALLOYS.** Responsible body: TC10 Committee on Environmental Assisted Cracking.
D2-99 **FRACTURE TOUGHNESS OF CERAMICS USING THE SEVNB METHOD; ROUND ROBIN, TEST PROGRAMME.** The ESIS TC6 and VAMAS TWA3 developed a test method and conducted a round robin for its validation. D2-99 presents a detailed documentation of this activity. The final form of the test method has appeared as P5-00. Responsible body: TC6 Committee on Ceramics.

2012
Membership Application Form

European Structural Integrity Society

1ST JANUARY 2012 to 31ST DECEMBER 2012

All members will be registered as Individual Members and will receive the ESIS Newsletter, once a year. Membership Fees should be paid either by Cheque or by Credit Card to the value of € 30 (Euros).

Please put a cross (X) in the appropriate box(es) :

☐ Register me as an ESIS member for the year 2012 and send the ESIS Newsletters to the address stated below (in BLOCK CAPITALS please).

Payment details. All cheques are to be made **payable to ESIS**.
Since the membership fee is exceedingly cheap, PLEASE REGARD THIS FORM AS AN OFFICIAL INVOICE, noting that on receipt of your payment you will receive an official receipt plus your ESIS 2010 membership number.

☐ Enclosed is a cheque for € 30 (Euros) payable to ESIS (please write your name, and address on the reverse side of your cheque).

OR

☐ Enclosed is a copy of bank transfer for € 30 (Euros) to ESIS account by the Unicredit Banca, Bank Code IT 22 N 02008 01160 000020016279.

OR

☐ Please charge to my (**delete as appropriate**) EUROCARD / MASTER CARD / VISA CARD / DINERS CARD / AMERICAN EXPRESS CARD an amount of € 30 (Euros). My card number is:

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e-mail: Tel No:

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For ESIS records purposes please give the numbers of the ESIS Technical Committees in which you are most interested (see www.structuralintegrity.eu).

Technical Committee(s):-

All ESIS Procedures and books are free for ESIS Members at www.structuralintegrity.eu

Please return this form to:
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Professor Giuseppe Ferro,
Dept. of Structural Engineering,
Politecnico di Torino,
Corso Duca degli Abruzzi 24
10129 Torino, Italy

or complete the web membership form at www.structuralintegrity.eu