

Skupovi – Izveštaji

Events – Reports

ECF22 BEOGRAD 26–31.08.2018.

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Dvadeset druga Evropska Konferencija o Lomu (European Conference on Fracture – ECF22) održana je u Beogradu, 26-31. avgusta 2018. godine, u organizaciji Društva za Integritet i Vek Konstrukcija “Prof. Dr Stojan Sedmak” (DIVK), a pod pokroviteljstvom Evropskog Društva za Integritet Konstrukcija (*European Structural Integrity Society* – ESIS).

Na ECF22 registrovano je ukupno 566 učesnika iz 47 država, sa svih kontinenata. Najviše učesnika je bilo iz Srbije (84), Nemačke (54), Rusije (52), Japana (52), Velike Britanije (33), Italije (28), Kine (25), Francuske (22), Češke (18), Poljske (16), Južne Koreje (14), Slovačke (14), Norveške (13), Španije (12), Belgije (10), Slovenije (10). U poređenju sa prethodnim konferencijama, ECF22 spada u najbrojnije i najuspešnije, a po opštoj oceni, predstavila je Srbiju na najbolji mogući način. U prilog tome ide izuzetno bogat društveni život (5 izleta po Srbiji, 2 po Beogradu, koktel dobrodošlice, kulturno veče i svečana večera).

Konferenciji je prethodila peta ESIS Letnja Škola Mehanike Loma sa 90 učesnika i odličnim predavanjima (Džejms Rajs, Džon Landes, Frančesko Jakovielo, Bamber Blekman i Lesli Sils-Benks), uz značajnu podršku laboratorija u Vojnotehničkom Institutu Žarkovo (Zijah Burzić, Srđa Perković) i na Tehnološko-metalurškom fakultetu Univerziteta u Beogradu (Milorad Zrilić, Blagoj Petrovski), gde su učesnici mogli da vide praktičnu primenu mehanike loma.

Za početak, treba istaći veliku podršku i izvanrednu saradnju sa tada predsednikom ESIS Prof. Lesli Sils-Benks (Izrael) koja je ujedno stavila tačku na osmo godišnje predsednikovanje, i stekla nezvaničnu titulu najboljeg predsednika ikad. Ipak najveće zasluge za saradnju pripadaju tada potpredsedniku, a sada predsedniku ESIS, Prof. Frančesku Jakovijelu (Italija), koji je u svakom trenutku bio u kontaktu sa nama, i preneo nam sva svoja iskustva kao organizator prethodne konferencije (ECF21). Konačno, članovi Izvršnog Odbora, Prof. Žilijan Ženg (Norveška), Valeri Šljanikov (Rusija), Bamber Blekman (Engleska), Per Štale (Švedska), Bepe Ferro (Italija) su takođe pružili punu podršku i bili su nam značajan oslonac u svakom pogledu.

Kao svaka Konferencija, ECF22 je imala svoje plenarne predavače, koji su odličnim izlaganjima definisali osnovne teme konferencije, i podigli inače visok sveukupni nivo konferencije. Stoga poimence navodimo profesore Joši Honga (Kina), Jovu Jarića (Srbija), Dražana Kozak (Hrvatska), Majnhardu Kunu (Nemačka), Nenada Gubeljaka (Slovenija), Roberta Ričija (SAD), Takajuki Kitamura (Japan), Jongganga Huanga (SAD), Uve Zerbsta (Nemačka) i Vilijama Kurtina (Švajcarska). Ipak, posebno mesto na ECF22 i u našim srcima ostaje za legendu mehanike loma, Prof. Džejmsa Rajsa (SAD), koji je održao specijalno predavanje u okviru Letnje Škole, a u povodu 50-te godišnjice J integrala, kao i uvodno predavanje na konferenciji. Najmanje što smo mogli da uradimo su bile ovacije posle uvodnog predavanja i dodela Griffitove medalje, kao skromnog priznanja za njegov gigantski doprinos razvoju mehanike loma. Ostaje takođe da se pamti nastup Džona Landesa na Letnjoj Školi, kao dopuna Rajsovom predavanju, od strane čoveka koji je prvi izmerio J integral.

U okviru ECF22 održano je i tradicionalno, ESIS/Elsevier takmičenje za najbolji rad mladih istraživača. U konkurenciji osmoro kandidata, pobedio je Junhe Lian (Nemačka), a drugo mesto osvojio Guian Quin (Kina). Osim ovog, održano je po prvi put takmičenje za najbolji rad u oblasti mehanike loma zavarenih spojeva, kao sećanje na Prof. Stojana Sedmaka, osnivača DIVK, za koje je nagradu obezbedio dr Galip Bujukjildirim (Turska). Pobjednik u ovoj kategoriji je bio Fedor Fomin (Nemačka), a drugo mesto je osvojio Dušan Arsić (Srbija). Ostala tradicionalna ESIS priznanja su dobili Prof. Filipo Berto (Nagrada za zasluge),

The 22nd European Conference on Fracture – ECF22 was held in Belgrade, from August 26-31, 2018, organised by the *Society for Structural Integrity and Life ‘Prof. Dr Stojan Sedmak’* (DIVK), and sponsored by the European Structural Integrity Society - ESIS).

ECF22 had a total of 566 registered participants from 47 countries, from all continents. The highest number of participants came from Serbia (84), Germany (54), Russia (52), Japan (52), Great Britain (33), Italy (28), China (25), France (22), Czech Republic (18), Poland (16), South Korea (14), Slovakia (14), Norway (13), Spain (12), Belgium (10), Slovenia (10). Compared to previous conferences, ECF22 falls within the most attended and successful, and in general, Serbia as the host has been presented in an attractive way. This included a very rich social programme (5 tours in Serbia, 2 tours in Belgrade, a welcome cocktail, cultural evening, and gala dinner).

The ESIS Fifth Fracture Mechanics Summer School took place just prior to the conference with 90 participants and exciting lectures (from James Rice, John Landes, Francesco Iacoviello, Bamber Blackman and Leslie Sils-Banks), with considerable support from the Žarkovo Military Technical Institute laboratories (Zijah Burzić, Srđa Perković) and from the Faculty of Technology and Metallurgy of the University of Belgrade (Milorad Zrilić, Blagoj Petrovski), where participants witnessed practical applications of fracture mechanics.

At first, the huge support and exceptional cooperation with the then ESIS President, Prof. Leslie Sils-Banks from Israel, who on this occasion had ended her eight-year mandate, and earned an unofficial title as the most successful president ever. Nonetheless, the most of credits go to Francesco Iacoviello from Italy, who maintained contact with us throughout the entire period, and has passed on to us his experience as organiser of the previous conference (ECF21). Finally, members of the Executive Committee - ExCo, Prof. Ziliang Zhang (Norway), Valery Shlyannikov (Russia), Bamber Blackman (England), Per Ståhle (Sweden), Bepe Ferro (Italy), have also gave their full support and were an important guide in every aspect.

As with any conference, ECF22 had its plenary sessions whose presenters defined the main topics of the conference with excellent presentations, posing a very high level. Hence, we name the professors Youshi Hong (China), Jovo Jarić (Serbia), Dražan Kozak (Croatia), Meinhard Kuna (Germany), Nenad Gubelj (Slovenia), Robert Ritchie (USA), Takayuki Kitamura (Japan), Yonggang Huang (USA), Uwe Zerbst (Germany) and William Curtin (Switzerland). A particular place at ECF22 and in our hearts belongs to Prof. James Rice (USA), who gave a special lecture at the Summer School, on the occasion of the 50th anniversary of the J-integral, and an introductory lecture at the conference. The least that we could do was to award with ovations after the introductory lecture and present the Griffith medal, as respectful appreciation for his immense contribution in the development of fracture mechanics. John Landes' presentation at the Summer School shall also be remembered, as supplement to the Rice' lecture, presented by the person who first measured the J integral.

Within the framework of ECF22, a traditional ESIS/Elsevier competition for best young scientists' paper was held. Among eight candidates, Junhe Lian (Germany) had won, and the second place was awarded to Guian Quin (China). Besides this, the first ever competition to take place for best paper in the field of fracture mechanics of welded joints, established in the memory of Prof. Stojan Sedmak, founder of DIVK, and the prize was provided by Dr Galip Buyukyildirim (Turkey). The winner in this category is Fedor Fomin (Germany), and second place went to Dušan Arsić (Serbia). Other traditional ESIS awards went to Prof. Filipo Berto

odnosno, Žak Beson (Francuska), Žilijan Ženg, Per Štale i Valeri Šljanikov (Počasno članstvo).

Od preko 500 predstavljenih radova (380 oral, 125 postera), za štampu u Zborniku radova (*Procedia Structural Integrity – Elsevier*) odabrano je 372, a za specijalna izdanja Elsevier-ovih časopisa predloženo je blizu 100 radova, čiji autori su pozvani da pošalju proširene verzije u *Engineering Fracture Mechanics*, *Engineering Failure Analysis*, *Theoretical and Applied Fracture Mechanics* i *International Journal of Fatigue*, kao i u časopis DIVK-a *Integritet i vek konstrukcija*. Minisimpozijumi su još jedna značajna aktivnost konferencije, a svojom brojnošću (50 radova) i vrhunskom kvalitetom izlaganja se istakla tema posvećena vodoničnoj krtosti koju je organizovao Prof. Miloš Đukić. U Kombinaciji sa minisimpozijumima, ili nezavisno od njih, nekoliko ESIS Tehničkih komisija su imale svoje sekcije: TC12 (*Analiza rizika i bezbednost velikih konstrukcija i komponenata*), TC13 (*Obrazovanje i obuka*), TC14 (*Integritet biomedicinskih i bioloških materijala*), TC17 (*Ispitivanje bez razaranja*). Svi apstrakti (582) su odštampani kao posebno izdanje DIVK.

Sa posebnim zadovoljstvom navodim sve one koji su doprineli dobroj organizaciji i uspehu ECF22, počev od Branislava Đorđevića, koji je držao sve pod kontrolom tokom svih 7 dana, preko ko-predsednika Organizacionog Odbora (Snežana Kirin, Marko Rakin, Zoran Radaković), pa sve do (u slučajnom redosledu) Dragane Perović, Mihajla Arandelovića, Simona Sedmaka, Vuka Adžića, Miloša Miloševića, Nenada Mitrovića, Nikole Milovanovića, Nenada Miloševića, Milana Travice, Alekse Milovanovića, Emine Džindo, Tee Sedmak, Jasmine Milenković, Ivane Cvetković, Jadranke Petrov, Milice Perić, Milice Paunović i Zorane Golubović. Na samom kraju, ostaju sponzori bez kojih bi uspeh konferencije bio polovičan, počev od platinastog sponzora, Shimadzu, preko glavnih sponzora Ministarstva prosvete, nauke i tehnološkog razvoja, i Elektroprivrede Srbije, do onih koji su takođe pružili značajnu podršku (Rumul, Messer, Sobriety, Trokut).

U Beogradu, 22. oktobra 2018. godine

Prof. Aleksandar Sedmak,
predsednik Organizacionog odbora ECF22



Džejsms Rajs – uvodno predavanje.
James Rice – introductory lecture.

(*Award of Merit*), and to Jacques Besson (France), Ziliang Zhang, Per Stahle and Valery Shlyannikov (*ESIS fellowship*).

A selection of 372 papers is made from over 500 presented papers (380 oral, 125 posters) to be printed in *Procedia Structural Integrity – Elsevier*, and around 100 papers have been proposed to be included in special editions of Elsevier journals, whereupon the authors are instructed to send their extended paper versions to *Engineering Fracture Mechanics*, *Engineering Failure Analysis*, *Theoretical and Applied Fracture Mechanics* and the *International Journal of Fatigue*, as well as to DIVK journal *Structural Integrity and Life*. The Minisymposia were another important conference activity with 50 papers and high quality of presentation, organised by Prof. Miloš Đukić with a topic highlighting hydrogen embrittlement. Several ESIS Technical Committee sessions were held, combined with Minisymposia, or independently: TC12 (*Risk analysis and safety of large structures and components*), TC13 (*Education and training*), TC14 (*Integrity of biomedical and biological materials*), TC17 (*Non-destructive evaluation*). All submitted abstracts are printed as a special DIVK edition.

It is a pleasure to mention all the persons that contributed to good organisation and success of ECF22, starting from Branislav Đorđević, who had everything under control during the 7 days, through co-presidents of the Organising Committee (Snežana Kirin, Marko Rakin, Zoran Radaković), to (arbitrarily) Dragana Perović, Mihajlo Arandelović, Simon Sedmak, Vuk Adžić, Miloš Milošević, Nenad Mitrović, Nikola Milovanović, Nenad Milošević, Milan Travica, Aleksa Milovanović, Emina Džindo, Tea Sedmak, Jasmina Milenković, Ivana Cvetković, Jadranka Petrov, Milica Perić, Milica Paunović and Zorana Golubović. Finally, I would like to mention the sponsors without who the conference would have had only partial success, starting from platinum sponsor Shimadzu, through major sponsors: Ministry of Education, Science and Technological Development, and Elektroprivreda Serbia, to those who also had a significant contribution (Rumul, Messer, Sobriety, Trokut).

Belgrade, October 22, 2018

Prof. Aleksandar Sedmak,
President of the ECF22 Organising Committee



Džejsms Rajs i Lesli Sils-Benks – dodela Grifitove medalje.
James Rice and Lesley Sills-Banks – awarding the Griffith Medal.



Lesli Sils-Benks – otvaranje ECF22, iza Viktor Nedović, Nenad Zrnić i Frančesko Jakovielo.

Lesley Sills-Banks – ECF22 opening ceremony, Viktor Nedović, Nenad Zrnić. and Francesco Iacoviello (in the background).



Aleksandar Sedmak i Lesli Sils-Benks, u pozadini Nenad Zrnić i Frančesko Jakovielo.

Aleksandar Sedmak and Lesley Sills-Banks, with Nenad Zrnić and Francesco Iacoviello (in the background).



Džon Landes, Nenad Gubelj i deo publike - Letnja Škola

John Landes, Nenad Gubelj, and part of the audience – Summer School.

Guest lecturer Prof. Youshi Hong
Friday August 31, 2018 at the University of Belgrade,
Faculty of Mechanical Engineering Prof. Youshi Hong
LNM, Institute of Mechanics, Chinese Academy of
Sciences presented ‘Advances and Challenges in Very-
High-Cycle Fatigue for Metallic Materials’ as part of his
visit to DIVK.

Youshi Hong, LNM, Institute of Mechanics, Chinese Academy of Sciences, Beijing 100190, China

Abstract

Fatigue failure of metallic materials may happen at a stress below conventional fatigue limit and the fatigue life is beyond 10^7 cycles, which is the new research regime of very-high-cycle fatigue (VHCF). The significance of VHCF research is of two folds. On the one hand, the mechanism of crack initiation and propagation for VHCF differs from that for high-cycle and low-



cycle fatigue, for which the new mechanism needs to be revealed. On the other hand, engineering structures and components, such as airplanes, high-speed trains and suspension bridges, require more than 10^7 cycles of safe performance.

This presentation is about the newly advances and the encountered challenges in VHCF issues, of which I share with you the following parts: What is VHCF? Why is VHCF investigated? What are the essential characteristics of VHCF? What are the newly advances and encountered challenges in VHCF?

Biography of Prof. Dr Youshi Hong

Youshi Hong is Professor at the Institute of Mechanics (IMECH), Chinese Academy of Sciences (CAS). He was Director of IMECH-CAS between 1998 and 2006. He has been Editor-in-Chief for *Fatigue & Fracture of Engineering Materials & Structures* (FFEMS) since 2012. He is elected as academician of Asia Pacific Academy of Materials Science in 2017.

His research fields are mechanical behaviour of materials, fracture mechanics and structural mechanics. His main research achievements are related to: high-cycle and very-high-cycle fatigue behaviour of metallic materials; effects of second phase

particles on deformation, fracture and stress corrosion cracking of steels; analyses of stress intensity factors and plastic zone sizes for notch-cracks and fatigue crack growth from a circular notch under biaxial stress; mechanism and modelling of collective damage evolution process of initiation and propagation for short fatigue cracks; and mechanical behaviour of nano-crystalline metallic materials. He has published 310 papers in academic journals and conference proceedings, and obtained 13 Chinese patents. He received a First Grade Award of Natural Science of CAS and received a National Second Grade Award of Natural Science.



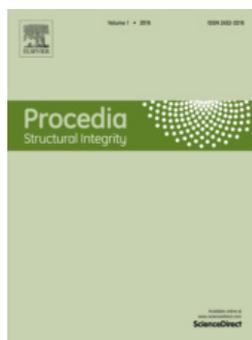
Prof. Dr Youshi Hong answering to the questions of the audience, at the Faculty of Mechanical Engineering, University of Belgrade.

ESIS News – December 2018



PROCEDIA STRUCTURAL INTEGRITY

We are delighted to share the news that *Procedia Structural Integrity* is now indexed in Scopus! Congratulations to all the authors and the Guest Editors!



ECF23

June 28-July 3, 2020. Funchal, Madeira, Portugal

6TH SUMMER SCHOOL ON FRACTURE MECHANICS Cracow (Poland) 13-15 September, 2019

The integrity of a structure must be of the upmost interest of each mechanical and civil engineer. The importance of this engineering field is proven in everyday news where the spectacular catastrophes are reported ...

ESIS TC WORKSHOPS AND MEETINGS

TC8: Technical Meeting on Numerical Methods, January 17-18, 2019. Cassino, Italy ([LINK](#)).

TC2: Minisymposium, June 26-28, 2019. Brno, Czech Republic (in MSMF9, [LINK](#)).

TC12: Annual Meeting, July 1-2, 2019. Porto, Portugal (in IRAS, [Flyer](#), [LINK](#)).

TC14: International Conference on Stents: Materials, Mechanics and Manufacturing, London, UK, July 15-17, 2019 ([LINK](#)).

TC15 - ESIAM 2019: First European Conference on Structural Integrity of Additively Manufactured Materials, September 9-11, 2019, Trondheim, Norway ([LINK](#)). Abstract submission deadline: December 15, 2018.

19TH INTERNATIONAL ASTM/ESIS SYMPOSIUM on Fatigue and Fracture Mechanics (42ND National Symposium on Fatigue and Fracture Mechanics) May 15-17, 2019, Denver, CO ([LINK](#))

BLOG ON iMechanica

Experimental data availability is a cornerstone for reproducibility in experimental fracture mechanics. A theory may be interesting but of little value until it has been proven by experiments. All the proof of a theory is in the experiment. What is the point if there is no raw-data for quality check? A survey involving 1500 researchers finds that 70% failed to reproduce other scientist's experiments. As a surprise, the same survey finds that the common scientists are confident that peer reviewed published experiments are reproducible. The pragmatic result a recent survey presented in EFM is that only 6% of researchers will provide data, and you have to ask for it. That is a really disappointing result ...

OTHER EVENTS

- December 3-6, 2018, Perth, Western Australia, 11th International Conference on Structural Integrity and Failure SIF-2018. [LINK](#).
- February 11, 2019, Israel Structural Integrity Group (ISIG) Symposium, Tel Aviv, Israel. [LINK](#).
- April 1-3, 2019, Seville, Spain, ISFF9, 9th Symposium on Fretting Fatigue, [Flyer](#). [LINK](#).
- April 3-5, 2019, Seville, Spain, Spanish Conference on Fracture. [LINK](#).
- April 10, 2019, Beyond code safety requirements for nuclear pressure systems, [Flyer](#).
- May 8-9, 2019, Manchester/Cambridge, UK, ESIA15 - International Conference on Engineering Structural Integrity Assessment ([Flyer](#))
- May 15-17, 2019, 19th International ASTM/ESIS Symposium on Fatigue and Fracture Mechanics (42nd National Symposium on Fatigue and Fracture Mechanics), Denver, CO, [LINK](#). Abstract deadline: 31.08.2018.
- June 3-6, 2019, 6th International Conference 'Fracture Mechanics of Materials and Structural Integrity', Lviv, Ukraine. [Flyer](#). [LINK](#).
- June 12-14, 2019, 25th International Conference on Fracture and Structural Integrity IGF25 (and Summer School, June 9-11). Catania, Italy. [LINK](#).
- June 24-26, 2019, ICMFF12, 12th International Conference on Multiaxial Fatigue and Fracture, Bordeaux, France, [Flyer](#). [LINK](#).
- June 26-28, 2019, MSMF9, Materials Structure and Micromechanics of Fracture, Brno, Czech Republic ([LINK](#))
- July 1-2, 2019 1st IRAS, Risk Analysis and Safety of Complex Structures and Components, Porto, Portugal ([Flyer](#). [LINK](#)).
- September 2-5, 2019. ICSI: International Conference on Structural Integrity. Funchal, Madeira, Portugal ([LINK](#)).
- November 13-15, 2019. 4th International Workshop on Thermo-Mechanical Fatigue. Berlin, Germany ([LINK](#)).
- March 30 - April 3, 2020. VAL4, 4th International Conference on Material and Component Performance under Variable Amplitude Loading, Darmstadt, Germany. [First Announcement](#).

PROCEDIA STRUCTURAL INTEGRITY

Volume 11: XIV International Conference on Building Pathology and Constructions Repair, Florence, Italy, June 20-22, 2018. [LINK](#)

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ESIS TECHNICAL COMMITTEES:
JOIN THE DEDICATED MAILING LISTS

In order to be always update about the activities organized by the ESIS Technical Committees of your interest, now you can join the mailing lists managed directly by the TCs Chairmen. The procedure is really simple. You have only to select the TC of your interest in the list you find below (also more than one!):

- ESIS TC01 - Elastic plastic fracture mechanics
- ESIS TC02 - Micromechanisms
- ESIS TC03 - Fatigue of engineering materials and structures
- ESIS TC04 - Polymers, polymer composites and adhesives
- ESIS TC05 - Dynamics of fracture and structural transformations
- ESIS TC06 - Ceramics ESIS
- ESIS TC08 - Numerical methods
- ESIS TC09 - Concrete
- ESIS TC10 - Environmentally assisted cracking
- ESIS TC11 - High temperature mechanical testing
- ESIS TC12 - Risk analysis and safety of large structures and components
- ESIS TC13 - Education and training
- ESIS TC14 - Integrity of biomedical and biological materials
- ESIS TC15: Structural integrity of additively manufactured components
- ESIS TC16: Finite fracture mechanics
- ESIS TC17: Non-destructive evaluation
- ESIS TC24 - Integrity of railway structures

ESIS TECHNICAL COMMITTEES: Shared Google Drive folders

For each TC, a shared Google Drive folder has been activated. Filling the FORM and joining the TCs (one or more, it doesn't matter!), you will be able to share your publications (in the pre-print format), giving them more evidence, and you will be always updated about the papers published by other TC members on the topics of your interest (and, obviously, about the TC activities).

ESIS-TC subscription form: [LINK](#)

How to share your papers in G Drive: [LINK](#)

ESIS: G SUITE FOR ALL THE ESIS MEMBERS

ESIS has been approved for Google Apps for Nonprofits. The G Suite (basic version) has been activated for all the ESIS members (from 2016 onwards) and soon they will receive the credentials completely free of charge (the normal cost of this service is 50 USD per user/year).

Many new services are active in the G Suite (e.g., Classroom, that is really useful in the organisation of Summer Schools) and other services are improved if compared to 'standard' Google services (e.g., Google Drive is 30 GB instead of 'standard' 15 GB).

If you are a 2018 ESIS member and you did not receive the credentials, please, send us an email (esisweb.org@gmail.com).

Since 2017, G Suite credentials have been used as credentials for the ESIS website (please, activate these credentials in Google before using them in the ESIS website).

Be always update with ESIS events and activities!

- Facebook page: [LINK](#)
- Telegram channel: [LINK](#)
- LinkedIn: [LINK](#)
- Blog on imechanica: [LINK](#)
- ESIS Newsletters: [LINK](#)