



## ECF22 - Loading and Environmental Effects on Structural Integrity

### Editorial

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Probably only few would remember that Serbia was already involved in European Conference of Fracture (ECF) organization. It was not destined to happen in ex-Yugoslavia, back in 1992, but it has happened in Varna, Bulgaria, instead, organized as mission impossible by Prof. Stojan Sedmak, from Belgrade. Interestingly enough it was after Italy, ECF8 in Turin, 1990, just like this one, after Catania, ECF21, in 2016. I have been involved in organization of ECF9, and it is maybe right moment to say now thank you Italy, thank you Donato Firrao for your help in early nineties, and thank you Francesco Iacoviello for everything you did to make ECF22 successful event. Anyhow, let me also emphasize one significant difference. Namely, organizing ECF9 was tedious job because of hardly any communication with outside world, and except Donato, it was only Stefan Vodenicharov and his team from Bulgaria, whom I remember as big help. On the contrary, ECF22 was a straightforward job, since we just followed great successes of Kazan in 2012, Trondheim in 2014 and Catania in 2016, relaying strongly on support of not only chairmen of three preceding conferences (Valery Shlyannikov, Zhiliang Zhang and Francesco Iacoviello), but also on many other ESIS members, actually too many to be listed here. Coincidentally or not, these Conferences happened during the presidency of Leslie Banks-Sills. Well, definitely not a coincidence, since the first female officer in ESIS history was also the best ever president, if I may say.

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It was not only due to ESIS agreement with Elsevier, but even more due to big success of ECF21 *Procedia Structural Integrity*, that we now present ECF22 proceedings as its second edition. We hope that at least partly ECF22 *Procedia Structural Integrity* will follow this success. It was a big effort of many people to manage more than 500 presentations during ECF22, and to review and prepare 371 papers for proceedings. Big impact came from mini-symposia, listed here, especially the one on Hydrogen Embrittlement with 50 presentation:

- Milos Djukic, William Curtin, Zhiliang Zhang, "Recent Advances on Hydrogen Embrittlement Understanding and Future Research Framework"
- Siegfried Schmauder, Zeljko Bozic, "Multiscale Damage Analysis of Fatigue and Fracture of Metals"
- Vadim Silberschmidt "Damage and Fracture of Biological and Biomedical Materials"
- Uwe Zerbst, Stefano Beretta, Andrea Carpinteri, "Defects and fatigue"
- Jose Antonio Correia, Vladimir Moskvichev, "Risk Analysis and Safety of Technical Systems"
- Giacomo Risitano, "Energy Methods for Fatigue Assessment".

The essence of every conference are plenary lectures. Although they are not published here, since all of them presented already published results, let us remember brilliant lectures given by James Rice on Perspectives on dynamic fracture arising from study of earthquake ruptures, Jovo Jaric on Conservation laws of J integral type, Youshi Hong on The State of the Art in Very-High-Cycle Fatigue Research, Uwe Zerbst on Application of fracture mechanics to S-N curve prediction, Meinhard Kuna on Micromechanical Modeling of Fracture in Metallic Materials, Robert Ritchie on Damage Tolerance in Biological and Metallic Material, Yonggang Huang on Soft Network Composite Materials with Deterministic and Bio-Inspired Designs, Takayuki Kitamura on Challenge toward Nanometer Scale Fracture Mechanics, William Curtin on Mechanisms of Hydrogen Embrittlement: Insights from Atomistic Studies, Drazen Kozak and Nenad Gubeljak on Integrity of pipeline by using pipe-ring testing. It was our utmost privilege to have James Rice with us who delivered also the special lecture on the occasion of 50<sup>th</sup> anniversary of J integral, making the 5<sup>th</sup> Summer School, held on the eve of ECF22, a memorable event.

All papers from ESIS/Elsevier young researcher best paper award competition deserve special attention, not only the winner, Junhe Lian, and the second best, Guian Quin, but also Aziz Tokgoz, Mor Mega, Yaroslav Khaburskyi, Anke Schmiedt, Que Zaiqing, Yaroslav Dubyk. Another, newly established award for the best weldment fracture mechanics paper, in memory of Prof. Stojan Sedmak (thanks to the Turkish welding community and Galip Buyukyildirim) also attracted high quality papers, just to mention the winner, Fedor Fomin. I do hope this completion and award will become a tradition.

Finally, let me once again praise the Local Organizing Committee, International Scientific Committee and National Scientific Board for their contribution to the success of ECF22 and proceedings presented here.

ECF 22 Chairman, on the behalf of Editors

Prof. Aleksandar Sedmak