

**ESIS**  
**European Structural Integrity  
Society**

**ESIS Newsletter #66, January, 2021**

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**EDITORIAL BY THE ESIS  
PRESIDENT**

Dear friends,

2020 was a really weird year! It started as a normal leap year, but... "leap year, gloomy year"! ...the Covid - 19 pandemia started at the beginning of 2020, at least in Europe! The unknown development of the crisis, forced the ECF23 postponing to 2022. Now the 23<sup>rd</sup> European Conference on Fracture is scheduled in June 2022, always in Funhal, Madeira, Portugal.



After the ECF23 postponing, the ESIS ExCo decided to organize both a Virtual conference and a Virtual Summer School. In this Newsletter you will find the final reports for these two events, but I can tell you, shortly, that, thanks to the efforts of the ESIS Executive Committee and to the continuous support of all the ESIS Technical Committees, it was possible to organize two great and successful events: **the 1<sup>st</sup> Virtual European Conference on Fracture (VECF1)** and **the 1<sup>st</sup> Virtual ESIS Summer School (VESS1)**.

VECF1 was not simply a "remote event". The ESIS ExCo decided to modify the organization of the event, strongly improving the importance of the discussions. VESS1 was the largest Summer School ever organized by ESIS, with 11 days of activity and about 70 speakers. ESIS and its Technical Committees demonstrated once again that the ESIS Community is living and vibrant!

During the VECF1 there was also the meeting of the ESIS Council and some important Statutes modifications were approved and are now published in the ESIS website:

- the possibility for non-European countries to join ESIS with one representative in the ESIS Council;
- the possibility for "group of countries" to join ESIS with one representative;
- a detailed description of the election procedure of the President, of the Vice-Presidents, and the TCs officers.

2020 was a really hard year for the organization of the TCs and National Groups events. Some events were cancelled and many events were postponed to 2021. Anyhow, focussing Procedia Structural integrity, in 2020, three issues were been published up to now:

- Issue 25: 1st Virtual Conference on Structural Integrity - VCSI1

<https://www.sciencedirect.com/journal/procedia-structural-integrity/vol/25/suppl/C>

- Issue 26: 1st Mediterranean Conference on Fracture and Structural Integrity, MedFract1

<https://www.sciencedirect.com/journal/procedia-structural-integrity/vol/26/suppl/C>

- Issue 27: The 6th International E-Conference on Industrial, Mechanical, Electrical and Chemical Engineering (ICIMECE 2020) Special Symposium - Integrity of Mechanical Structure and Material

<https://www.sciencedirect.com/journal/procedia-structural-integrity/vol/27/suppl/C>

Other issues will be soon online and it is a pleasure to confirm that this publication media is successful! In order to encourage TCs and

National Groups to take advantage of this option, ESIS confirms the support part of the publication costs (1500 euros as ESIS contribution to Technical Committees and National Groups).

Now, I am at the half of my term as ESIS President. I warmly hope that the next two years will be smoother than 2020! Among the activities I hope will be successful, there is the ESIS-Publishing House.

In 2019, the ESIS ExCo approved the foundation of the ESIS Publishing House (ESIS-PH). Based on the OMP/PKP platform (Open Monograph Press | Public Knowledge Project), its mission is to offer to all the ESIS members, to the ESIS Technical Committees and to the ESIS National Groups, the possibility to publish online, completely free of charge, technical publications, monographies (both in English and in National Languages), scholarly editions (both in English and in National Languages), Ph.D thesis and edited volumes. All the volumes will be available on the platform with a CC-BY license (completely free of charge for the readers) and all the volumes will have their own ISBN code (if requested).

For each category of publication, the reviewing procedures are described in the ESIS-PH website (<https://www.esis-ph.eu/>). The service is active and, please, do not hesitate to submit your works!

I wish to remember that being an ESIS member has many advantages. First of all, you belong to a great researchers community focussed on the structural integrity issues with a scientific production that is published in many journals and publication media. Among them, I wish to remember:

- The four Elsevier journals affiliated with ESIS: Engineering Failure Analysis, Engineering Fracture Mechanics, International Journal of Fatigue and Theoretical and Applied Fracture Mechanics. We encourage you to publish your articles in these journals. A list of special issues is within the pages of this Newsletter.
- Procedia Structural Integrity (published by Elsevier, but directly coordinated by ESIS. Born in 016, eighteen issues have been published up to now. The journal is indexed in Scopus, Web of Science and Google Scholar.
- The new Publishing House, ESIS-PH.

The ESIS YouTube channel offers the video recordings of the presentations of the last ESIS Summer Schools and ECF events ... with more than 1250 subscribers!!

(<http://www.youtube.com/c/EuropeanStructuralIntegritySociety>)

Every 6 months, an ESIS NEWSLETTER is sent to all the ESIS members thanks to the work of Valery Shlyannikov, who also follows the publication of the special issues in the four international journals affiliated with ESIS. In addition, an ESIS NEWS is sent monthly and a Facebook page and a Telegram channel are active, in order to continuously update the ESIS members.

Facebook page:

<https://www.facebook.com/ESISweb/>

Telegram channel:

[t.me/ESISweb](https://t.me/ESISweb)

ESIS is requested to support many conferences, most of which are part of TC or National Group activities. In order to coordinate the dates and avoid conflicts, we suggest to TC and National Group Chairs to coordinate their meetings with the Vice President Aleksandar Sedmak. All the events are available in the ESIS Google calendar:

<https://calendar.google.com/calendar/embed?src=esisweb.org%40gmail.com&ctz=Europe%2FRome>

ESIS Blog on imechanica: our blogger, Per Ståhle, has reviewed many papers from Engineering Fracture Mechanics. We have an agreement with Elsevier which allows open access of these papers for six months. Hence, everyone can have access to them and join in the discussion on the blog. We welcome your comments which may be posted on the blog: <http://imechanica.org/node/9794>

Google Account: ESIS activated an agreement with Google. All the ESIS members receive (completely free of charge) the credentials for an "improved" Google account, for example with a Google Drive of 30 Gb instead of the standard 15 Gb (the value of this service is about 50 euros per year).

Many new services are active in the G-Suite (e.g., Classroom, that is really useful for the organization of Summer Schools) and other services are improved if compared to the "standard" Google services. Here you can find some details:

- Google Classroom:

<https://support.google.com/edu/classroom/?hl=en#topic=6020277>

- Google Sites:

<https://gsuite.google.com/learning-center/products/sites/get-started/>

- Google Drive:

<https://gsuite.google.com/learning-center/products/drive/>

More details are available in the Google Learning center  
<https://gsuite.google.com/learning-center/>

It is important to underline that with the activation of the G Suite account, each ESIS member:

- automatically guarantee that he/she will not misuse the account;
- understand that he/she is not authorized to send emails using the @structuralintegrity.eu account as ESIS.

These new accounts allowed us to activate some new services:

- Each Technical Committee has now its own "miniwebsite", with the possibility to directly update the information.
- For each Technical Committee, a shared Google Drive folder is active. Filling the FORM and joining the TCs (one or more, it doesn't matter!), each ESIS member is able to share his/her publications (in the pre-print format), giving them more evidence, and each ESIS member will be always updated about the papers published by the other TC members on the topics of his/her interest (and, obviously, about the TC activities).

ESIS-TC subscription FORM:  
<http://www.structuralintegrity.eu/site/activity/tc-subscription>

How to share your papers in G Drive:

<https://drive.google.com/file/d/0B6daTFbjZI5RG9VTnZMZzNfbkU/view?usp=sharing>

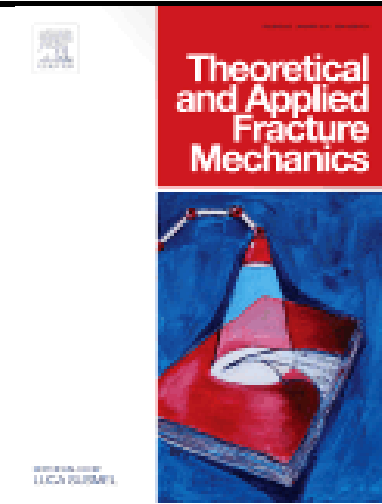
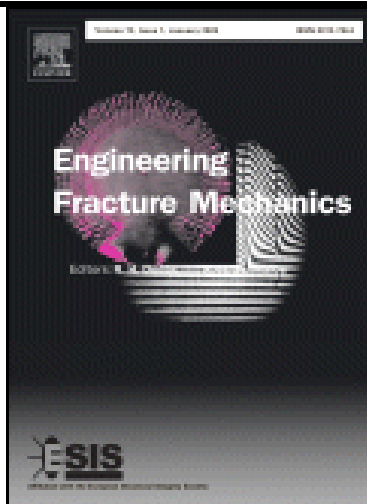
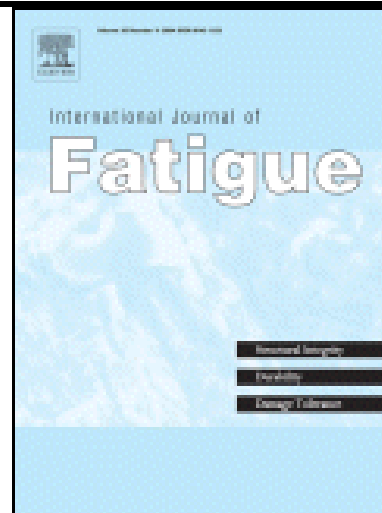
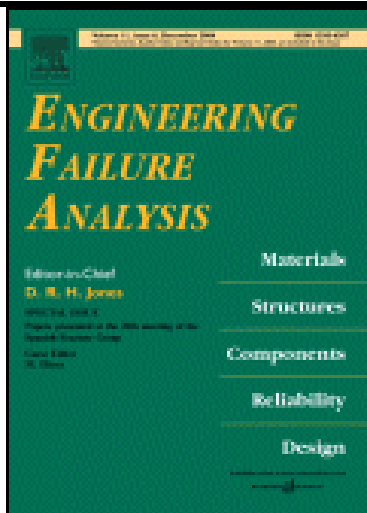
- In order to be always update about the activities organized by the ESIS Technical Committees of your interest, now the ESIS members can join the mailing lists managed directly by the TCs Chairmen. The procedure is really simple. The ESIS member has only to select the TC of his/her interest in the list he/she will find in all the ESIS NEWS we send monthly (also more than one!).

Finally, I would like to encourage you to join ESIS. In the ESIS website [www.structuralintegrity.eu](http://www.structuralintegrity.eu) you will find different possibilities, starting from the "Individual membership" (30 euros). In the ESIS website you can find the list of the advantages of being an ESIS member ... I can confirm you that, thank to your continuous support, we are a successful Society!

I wish you all the best for 2021, hoping in your support for all the ESIS initiatives and ... hoping that 2021 will be better than 2020!!  
Ciao!

*Francesco Iacoviello*

#### 4 Elsevier journals are affiliated with ESIS



## Special Issues 2019-20

Journal	Title	Source	Editor	Status
Int J Fatigue	Fatigue crack paths 2018	Crack path 2018	A. Carpinteri, F.Berto, Y.Hong, Th.Palin-Luc	IJF 121-125, April- November 2019
Theor and Appl Fract Mech	Crack Paths 2018	Crack path 2018	A.Carpinteri, F.Iacoviello, L.Pook, S.Vantadori	TAFM, 2019 (virtual SI)
Eng Failure Anal	2nd International Conference on Structural Integrity and Durability	ICSID 2018	Ž.Božić, R.Clegg, L.Banks-Sills, F.Berto, F.Iacoviello	EFA, 2019 (virtual SI)
Eng Failure Anal	ECF22 2018	ECF22		EFA, 2019 (virtual SI)
Eng Failure Anal	ISRAS-TC12	International Symposium on Risk analysis and Safety of Large Structures and Components	J.A.Correia; A.Sedmak; V.Moskvichev; A.Jesus; M.Muñiz- Calvente	EFA, 2019 (virtual SI)
Theor and Appl Fract Mech	Multiaxial Fracture 2019	The 12th International Conference on Multiaxial Fatigue and Fracture	Th.Palin-Luc, A.Carpinteri, M. Endo, F. Morel, M. Vormwald	TAFM, 2020 (virtual SI)
Eng Failure Anal	ISRAS-TC12	International Symposium on Risk analysis and Safety of Large Structures and Components (TC12/ESIS)	J.A.Correia; M.Muñiz- Calvente; A.Jesus; A.Sedmak; V.Moskvichev; Rui Calçada	EFA, 2020 (virtual SI)
Eng Failure Anal	ICSI 2019	International Conference on Structural Integrity 2019	V. Infante, Ing. Pedro Moreira, Ing. Paulo Tavares	EFA, 2020 (virtual SI)
Int J Fatigue	Multiaxial Fatigue 2019	The 12th International Conference on Multiaxial Fatigue and Fracture (ICMFF12)	A. Carpinteri, F. Dunne, A. Fatemi, F. Morel, Th. Palin-Luc	IJF, 2020 (virtual SI)
Int J Fatigue	ECF22	22nd European Conference on Fracture (ECF 22)	A. Sedmak, F. Iacoviello, V. Silberschmidt, S. Schmauder	IJF, 2020 (virtual SI)
Theor and Appl Fract Mech	Special issue ESIAM19 theoretical and applied fracture mechanics	The First European Conference on Structural Integrity of Additively Manufactured Materials	F. Berto, J. Torgersen, M. Benedetti, S. Bagherifard, Ch. Bo, G. Qian	TAFM, 2020 (virtual SI)

## ESIS Council Meeting

### On-line

24th June 2020, 10:00

### MINUTES

**Attendees:** There were 50 attendees, including 35 eligible voting representatives.

**Welcome,** Francesco Iacoviello

The president, Francesco Iacoviello, chaired the meeting and thanked all the Council members for connecting to this on-line meeting.

#### 1. Minutes of the last meeting, Bamber Blackman

The minutes of the last Council meeting (Belgrade, ECF22) were available on the ESIS website. They were accepted as correct.

#### 2. Establish voting members, Bamber Blackman

- a. The voting members of Council were established by the secretary, (based upon the ESIS Statutes and memberships for 2019/2020). Proxy representation had been identified earlier by communication with the secretary. The voting members were:

- i. Austria: O. Kolednik (for R. Pippan)
- ii. Belgium: R. Talem
- iii. Bulgaria: D. Angelova
- iv. Croatia: Ž. Božić
- v. Czech Republic: S. Seidl
- vi. France: J. Besson
- vii. Germany: D. Klingbeil
- viii. Greece: S. Kourkoulis
- ix. Hungary: S. Szavai (for P. Trampus)
- x. Israel: D. Sherman
- xi. Italy: F. Iacoviello
- xii. Lithuania: A. Adumitroaie
- xiii. Norway: Z. Zhang
- xiv. Poland: D. Kocanda
- xv. Portugal: P. Moreira
- xvi. Romania: L. Marsavina
- xvii. Russia: V. Shlyannikov
- xviii. Serbia: A. Sedmak
- xix. Spain: A. Martin-Meizoso

- xx. Sweden: T. Sjogren
- xxi. Switzerland: A. Brunner
- xxii. Ukraine: H. Nykyforchyn
- xxiii. United Kingdom: J. Marrow
- xxiv. TC1: U. Zerbst
- xxv. TC2: A. Jivkov
- xxvi. TC3: A. Carpinteri
- xxvii. TC4: G. Pinter (for B. Blackman & A.J. Brunner)
- xxviii. TC5: Y. Petrov
- xxix. TC6: J. Duzsa
- xxx. TC7: R. Clegg
- xxxi. TC8: J. Besson
- xxxii. TC9: G. Ferro
- xxxiii. TC10: J. Toribio
- xxxiv. TC11: H. Klingelhoffer
- xxxv. TC12: J. Correia
- xxxvi. TC13: P. Yasniy
- xxxvii. TC14: V. Silberschmidt
- xxxviii. TC15: F. Berto
- xxxix. TC16: Z. Yosibash
- xl. TC17: P. Trampus
- xli. TC24: S. Beretta
- xlii. Vice-President: A. Sedmak (voting only as NG rep)
- xliii. Vice-President: L. Marsavina (voting only as NG rep)
- xliv. Secretary: B. Blackman

- b. There were 35 of the above 45 eligible voting members present. The meeting and voting quora were therefore satisfied, according to the Statutes.

#### 3. President's Report: Francesco Iacoviello

- a. The president reported that Procedia Structural Integrity was now indexed in Google Scholar, Scopus and WoS. There had been 2 issues in 2016, 5 in 2017, 6 in 2018, 11 in 2019 and 1 in 2020 to date.
- b. Facebook had 307 followers, there had been 4000 recipients of the newsletter, there were 1043 subscribers to YouTube where 116,900 views had been enjoyed.
- c. FI reported that the ESIS Open Access Journals panel would

comprise the two journals (Frattura ed Integrità Strutturale, Fracture and Structural Integrity) and (Integritet i vek konstrukcija, Structural Integrity and Life).

- d. FI reported that ESIS Publishing House (EPH) would comprise the four affiliated Elsevier Journals, Procedia SI, and the Open Access Panel. The goal of EPH is offer to the ESIS community an online, open access, free of charge platform to publish monographs, edited volumes, scholarly editions and special technical publications both in English and in national languages.
  - e. FI reported that ExCo had received a proposal to form a new TC on bonded/welded structures. This proposal was agreed by ExCo. The new TC will be TC18- Structural Integrity of Welded joints, with Paolo Ferro, Oystein Grong and Aleksandar Sedmak as chairman and co-chairmen respectively.
4. **ECF 22.** Aleksandar Sedmak
    - a. Aleks reported that ECF22 had been a great success.
    - b. There had been 566 participants.
  5. **ECF23.** Pedro Moreira
    - a. Due to Covid-19, ECF23 had been postponed to 27th June to 1st July 2022.
    - b. The venue would remain unchanged.
    - c. 744 abstracts had been submitted.
  6. **Report on VECF1.** Francesco Iacoviello
    - a. VECF1 – 1st Virtual European Conference on Fracture was taking place over three days the following week. This event had been organized in only two months. FI thanked the ExCo for their great enthusiasm.
    - b. The attendance fees were €100. There were already 288 delegates registered.
    - c. This was to be published on the main website ([www.vecf1.eu](http://www.vecf1.eu)) which was completely open. @structuralintegrity.eu accounts

were used in order to have a smoother event.

- d. This was to be followed by VESS1 the 1st Virtual ESIS Summer School. This was all taking place on-line. It was being delivered by the TCs.
  - e. There were already 37 students registered. It was free but students needed to be ESIS members.
7. **Elsevier Special Issues and Publications.** Valery Shlyannikov
    - a. VS reported that a total of 47 SIs have been published.
  8. **Membership report.** Bamber Blackman
    - a. Membership figures were reported for the years 2017-2020 (to date).
    - b. In 2017, ESIS had 502 members and €6,267 had been received in membership fees.
    - c. In 2018, ESIS had 597members and €8,464 had been received in membership fees.
    - d. In 2019, ESIS had 686 members and € 6,847 had been received in fees.
    - e. In 2020, ESIS has 411 members and € 3,924 has been received in fees to date.
    - f. The growth in membership for 2018 and 2019 was +19% and +15% respectively.
    - g. Membership highlights were: Belgium reported a strong membership and a Benelux list was provided with 51 members; Lithuania and Slovakia reported National Groups in 2019 with 13 and 10 members respectively.
  9. **Budget,** Beppe Ferro and Francesco Iacoviello
    - a. The budget for the two-year period (2019-2020) was presented.
    - b. Expenses were estimated to include: 11 k€ (1k€ for each TC that organized an event in the frame of VESS1TC3, TC4, TC6, TC8, TC9, TC10, TC12, TC14, TC15 TC16, TC17); 6 k€ (2 ExCO Meetings in presence); Website running costs; 9 k€ (3 TC events + 3 NG events: support x PSI issue, 1.5 k€ each).
    - c. Income would be from the Elsevier contract and

membership and attendance fees.

**10. Report by Awards Committee for ECF23,** Pedro Moreira

- a. The Griffith Medal was to be awarded to Professor Leslie Banks-Sills.
- b. The Wohler Medal was to be awarded to Professor Filippo Berto.
- c. The Award of Merit was to be awarded to Professor Uwe Zerbst.
- d. Honorary Membership was to be awarded to Andrey Shanyavskiy.

**11. Report by the Fellows Committee for ECF23.** Francesco Iacoviello

- a. The following were to be awarded ESIS Fellowships: Dov Sherman; Zohar Yosibash; Donka Angelova; Liviu Marsavina and Andreas Brunner.

**12. Vote on statute changes**

- a. The details of three proposed changes to the statutes had been previously circulated to Council.
- b. It was agreed that an open ballot, using a Google form would take place.
- c. Proposed change 1, to allow nations to join ESIS as a group of nations was passed with 92.9% voting to approve.
- d. Proposed change 2, to allow non-European nations to affiliate to ESIS was passed with 82.1% voting to approve.
- e. Proposed change 3, to modify some the rules concerning the leadership of TCs, was passed with 85.7% voting to approve.

**13. Miscellaneous items**

- a. It was reported that TC13 will organize a remote learning workshop.
- b. ECF 2024, in 2024, would be in Zagreb, Croatia.

*Bamber Blackman*

## National Committees

### BeNeLux (observer)

#### 1<sup>st</sup> Benelux Network Meeting and Workshop on Damage and Fracture Mechanics (BDFM-2019)

##### Scope

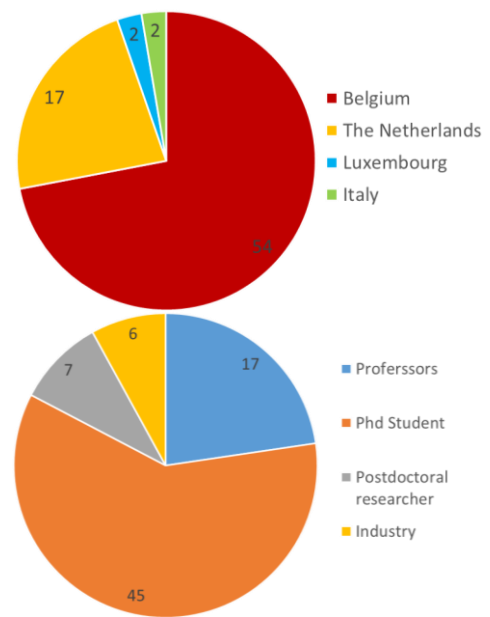
The BeNeLux Damage and Fracture Mechanics (BDFM) network meeting and workshop aims to build a strong network of researchers in Belgium, the Netherlands, and Luxembourg working on damage and fracture mechanics. The meeting is set up to establish co-operation and friendship between the delegates, to exchange new intellectual ideas in the area of failure mechanics, and to provide a platform for initiating research co-operation and joint proposal writing. BDFM is a joint initiative of KU Leuven and TU Eindhoven in collaboration with European Structural Integrity Society (ESIS). The organizing committee consisted of Prof. Reza Talmi (KU Leuven) and Prof. Johan Hoefnagels (Eindhoven University of Technology).

##### Motivation

In most European countries, researchers on damage and fracture mechanics are organized in active national societies, often with a large membership base, who organize various sorts of local meetings, ranging from informal PhD student research exchange meetings to multi-days national conferences. In contrast, Belgium, the Netherlands and Luxembourg have long lacked such activities, probably due to their small populations. By organizing the BDFM event our goal was to bring together the leading scientists in field of damage and fracture mechanics in BeNeLux, to provide a platform for informal meetings and discussion between PhD students, postdocs as well as their supervisors, and to host idea-focused presentations on a wide range of subjects to stimulate learning and inspiration.

##### BDFM-2019

The first BeNeLux Damage and Fracture Mechanics (BDFM) network meeting and workshop was successfully held in May 2019 at KU Leuven, Campus Carolus, Antwerp, Belgium. In total 75 participants from four countries, as shown in below figure, took part in the event in which new research developments in field of damage and fracture mechanics were presented and new ideas were exchanged between PhD students, Post-doc researchers, their supervisors and also participants from industry.



Following keynote speakers presented their research activities: Prof. Francesco Iacoviello, President of ESIS, "Introduction to European Structural Integrity Society (ESIS)", Prof. Thomas Pardoen, UC Louvain (BE), "Fracture mechanics in nano-objects", Prof. Stéphane Bordas, University of Luxembourg (LU), "Fracture mechanics across scales and time?", Prof. Leon Govaert, University of Twente (NL), "Plasticity vs. crack growth in long-term failure of thermo-plastics and composites", Dr. Eric Wyart, Team leader at Cenaero (BE), "20 years of XFEM, a success story?", Prof. Patricia Verleysen, Ghent University (BE), "Why and how to account for the dynamic nature of deformation, damage and fracture", Prof. Amir Zadpoor, TU Delft (NL), "Mechanics of additively manufactured lattice structures" and Prof. Leo Kestens, Ghent University (BE) & TU Delft (NL), "Microstructurally sensitive damage - Looking for the weakest link in the chain".



After the first series of keynotes, doctoral students had the opportunity to present their work during the poster session. In this session all participants were able to pitch their current and future research to a jury.



Out of the 24 participating students, the presentation of Lisa Claeys (Gent University) on "The effect of hydrogen on the properties of duplex stainless steel" was awarded as the best poster presentation.

Reza Talemi  
Johan Hoefnagels

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## Italy

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### Italian Group of Fracture activity

In 2020, the IGF (Italian Group of Fracture) organized:

- the 1<sup>st</sup> Virtual Conference on Structural Integrity, VCSI1. The event was held in January 2020 completely online (before the Covid-19 crisis!). It was co-organized with the Greek, the Portuguese and the Serbian groups and it was really successful, with about 60 participants. The conference was a sort of "test" for the VECF1

that was organized in June 2020 by the ESIS ExCo.

- the 1<sup>st</sup> Mediterranean Conference on Fracture, MedFract1. The event was co-organized with the Greek group in February and was one of the first examples of "blended" conference, with some participants who were able to join the conference only online due to the Covid-19. With more than 70 participants the event was a great success, also thanks to the warm hospitality of the Greek group and to the beauty of Athens!

In addition, IGF, with the co-organizers, published two issues on Procedia Structural Integrity (issues 25 and 26) and published 4 issues of the IGF journal (Frattura ed Integrità Strutturale, Fracture and Structural Integrity) with 123 published papers. In addition, a new plug-in has been activated: now it is possible for all the registered used to post comments to all the published papers.

In 2021, IGF will organize the 26<sup>th</sup> International Conference on Fracture and Structural Integrity - May 26-28, 2021, Turin (Italy) & Web (<https://www.igf26.eu/>). Considering the Covid-19 problem, it will be organized as a "blended" conference, both in presence, in the wonderful venue of the Valentino's Castle in Turin, and online. All the participants, both in presence and in remote, will be able to fully participate to the conference.



Every two years, the Italian Group of Fracture (IGF) awards up to two researchers with the following awards:

- Manson-Coffin IGF medal
- Paolo Lazzarin IGF Medal

Nominations for the IGF awards may be lodged with the IGF President ([gruppofrattura@gmail.com](mailto:gruppofrattura@gmail.com)) before February 23, 2021. These may be made by any 2020 and 2021 IGF member, and each nomination shall carry the name of a proposer and a seconder.

*Francesco Iacoviello*

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## TECHNICAL COMMITTEES

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### TC2: Micromechanisms

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TC2 were finalising the special issue of TAFMECH with papers from our meeting in 2019 in Brno, Czechia. We were preparing to have our meeting and symposium within ECF23, which was cancelled. Currently, we are planning for a meeting in September 2021, which could be joint with TC5 (Prof Yuri Petrov) and held in St Petersburg. However, we are waiting to see whether the situation will improve sufficiently to be able to do such a meeting. Hopefully, in January we will have more clarity. If this does not happen, our next meeting will be during the postponed ECF23 in June 2022.

*Andrey Jivkov*

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### TC3: Fatigue Of Engineering Materials And Structures

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#### Statutes and activities of ESIS Technical Committee No.3 (TC3) - December 2020

##### 1. Name

TC3: FATIGUE of ENGINEERING MATERIALS and STRUCTURES

**Chairpersons:** José António Correia and Sabrina Vantadori

**Secretaries:** Camilla Ronchei and Shun-Peng Zhu

##### 2. Objectives of TC3

(2.1) **Special Issue of International Journal of Fatigue** entitled "**Fatigue from crack initiation to failure: role of defects and life assessment**" (Guest Editors: Aleksandar Sedmak, Filippo Berto, Andrea Carpinteri, Uwe Zerbst), with papers selected from those

presented at the 22nd European Conference on Fracture (ECF22), held in Belgrade, Serbia, 26th to 31st August, 2018.

(2.2) **Special Issue of International Journal of Fatigue** entitled "**Fatigue modelling**" (Guest Editors: José António Correia, Filippo Berto, Shun-Peng Zhu, Peter Huffman, Sabrina Vantadori), in order to pay tribute to Profs. Alfonso Fernández-Canteli and Enrique Castillo, who dedicated more than 30 years of their scientific careers to studying fatigue strength modelling based on probabilistic approaches and the development of unified fatigue approaches.

(2.3) **Special Issue of International Journal of Fatigue** entitled "**Fracture and Fatigue of Structural Materials at different Length Scales**" (Guest Editors: José António Correia, Sabrina Vantadori), as a tribute of the work made by Prof. Andrea Carpinteri (University of Parma, Italy) and Dr. Les Pook (UCL, UK) as chairmen of the Technical Committee 3 - "Fatigue of Engineering Materials and Structures" - of European Structural Integrity Society from 2002 to 2020.

(2.4) Organisation of the **Virtual 7th International Conference on Crack Paths (CP 2021)**, 21st to 24th September, 2021. Chairpersons: Filippo Berto (Trondheim, Norway), José António Correia (Porto, Portugal), Francesco Iacoviello (Cassino, Italy), Stefano Natali (Roma, Italy), and Sabrina Vantadori (Parma, Italy).

### 3. Achievement of objectives

(3.1) **Special Issue of International Journal of Fatigue (Vol.140, 105778, 2020)**, entitled "**Multiaxial Fatigue 2019**" (Guest Editors: Andrea Carpinteri, Fionn Dunne, Ali Fatemi, Franck Morel, Thierry Palin-Luc), with papers selected from those presented at the 12th International Conference on Multiaxial Fatigue and Fracture (ICMFF12), held in Bordeaux, France, 24th to 26th June, 2019.

(3.2) **Special Issue of Theoretical and Applied Fracture Mechanics (Vol.108, 102670, 2020)**, entitled "**Multiaxial Fracture 2019**" (Guest Editors: Andrea Carpinteri, Masahiro Endo, Franck Morel, Thierry Palin-Luc, Michael Vormwald), with papers selected from those presented at the 12th International Conference on Multiaxial Fatigue and Fracture (ICMFF12), held in Bordeaux, France, 24th to 26th June, 2019.

(3.3) Organisation of the Thematic Symposium on "**Fracture and Fatigue in presence of cracks or stress concentrators**" (chaired by Professor Andrea Carpinteri, Professor Sabrina Vantadori, Parma, and Professor Camilla Ronchei, Cosenza, Italy) at the 1st Virtual European Conference on Fracture, 29th June, 2020.

(3.4) Organisation of the one day event in the frame of the **"1st Virtual ESIS Summer School – VESS1"**, entitled **"Fatigue of Materials and Structures"** (chaired by Professor Sabrina Vantadori, Parma, Italy) 8th July, 2020.

(3.5) Organization of the **Virtual Conference on Mechanical Fatigue (VCMF)**, chaired by José A.F.O. Correia, University of Porto, Portugal, 9-11 September 2020.

*José António Correia  
Sabrina Vantadori*

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## TC10: Environmentally Assisted Cracking

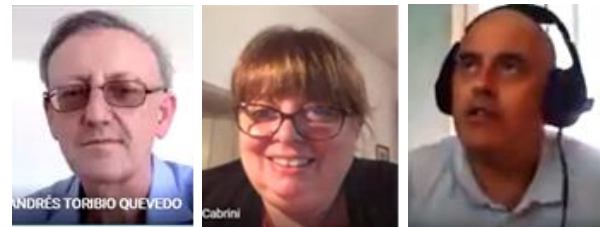
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The Covid-19 pandemic situation induced adjustments to the holding of the previously planned **European Conference on Fracture (ECF23)** scheduled in Funchal (Madeira, Portugal). Instead, of it, ESIS organized the **1st Virtual European Conference on Fracture (VECF1)** during the week June 29 – July 1, 2020, where TC10 took part in the organization of the mini-symposium entitled **"Environmentally Assisted Cracking and Hydrogen Embrittlement"** (Chairmen: **Jesús Toribio and Hryhoriy Nykyforchyn**). During the mini-symposium, the following reports were presented: A new model for hydrogen-induced crack (HIC) growth in metal alloy pipelines under extreme pressure (A. Balueva, I. N. Dashevskiy, J. Magana); Anisotropy of hydrogen embrittlement in cold-drawn pearlitic steel: A tribute to Mantegna (J. Toribio); Role of hydrogen in operational degradation of pipeline steel (H. Nykyforchyn, O. Tsyrlunyk, O. Zvirko, M. Hredil); Brittle fracture manifestation in gas pipeline steels after long term operation (M. Hredil, H. Krechkovska, O. Student, O. Tsyrlunyk); Finite element analysis of stress corrosion crack growth rate (M. Alkateb, S. Tadic, A. Sedmak).



**Participants of TC10 mini-symposium A. Balueva, A. Sedmak and M. Hredil**

The day of July 15, 2020 was devoted to the ESIS TC10 Committee in the framework of the innovative **1st Virtual ESIS Summer School (VESS1)**. The TC10 session was organized with the title: **"Environmentally Assisted Cracking and Hydrogen Embrittlement Affecting Structural Integrity of Engineering Materials: Analytical, Numerical and Experimental Approaches"**. (Chairmen: **Jesús Toribio and Hryhoriy Nykyforchyn**). The Scientific Program consisted of eight lectures and practically encompassed the most important topics on the problem of Environmentally Assisted Cracking and Hydrogen Embrittlement. The main subject of the lecture by Prof. Jesus Toribio (University of Salamanca, Spain) "Hydrogen assisted cracking paths in cold drawn pearlitic steel wires for wind turbine structures: Resembling Mantegna's Dead Christ Perspective" was related to anisotropic hydrogen embrittlement and hydrogen-assisted cracking paths of cold drawn pearlitic steel wires for wind turbine structures and foundations. Heavily drawn pearlitic steels exhibit in their hydrogen assisted cracking paths evidence of strongly anisotropic behaviour with a marked deflection angle of 90°. This resembles Mantegna's Dead Christ Perspective (MDCP) painting with relevant and innovative change of point of view in the Dead Christ (90° rotated from the traditional painting perspectives) with his body axis perpendicular to the canvas (foreshortening perspective).



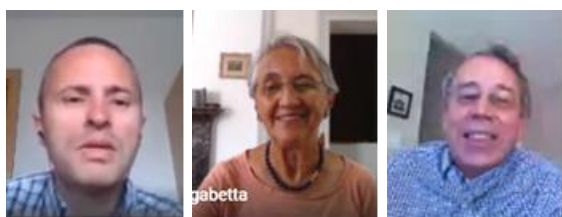
**VESS1 TC10 lecturers J. Toribio, M. Cabrini and G. Henaff**

Prof. Gilbert Henaff (ISAE-ENSMA, France) in the lecture "Environmentally-assisted fatigue crack growth in gaseous atmospheres" considered fatigue crack growth enhancement induced by the gaseous atmosphere in which the material is stressed. He showed phenomenological illustrations of this effect, and also discussed the mechanisms proposed. An emphasis is also placed on methodological approaches aimed at isolating these environmental effects, in particular by going back to intrinsic resistance in an inert environment. Some extensions to the case of fatigue crack growth under high pressure gaseous hydrogen gas were also presented.

The lecture "Non traditional techniques to study EAC phenomena" by Prof. Marina Cabrini (University of Bergamo, Italy) included some

tests developed to study in semi scale or in full scale the hydrogen embrittlement of HSLA steel in cathodic protection and the last results on the measure of hydrogen permeation during fatigue cycles. Also some results obtained in the past on the visualization of hydrogen distribution as a function of loading, by means of the photoelectrochemical technique were included in the lecture.

Prof. Kim Verbeken (Ghent University, Belgium) in the lecture "The potential of dedicated experimental methodologies to evaluate hydrogen/material interaction" addressed some dedicated experimental methodologies that were developed in order to provide insight on the H-material interaction. Focus was given on the evaluation of the effect of hydrogen on the mechanical properties of a material, on the study of the hydrogen diffusion process and on hydrogen trapping. Complementary material characterization techniques demonstrated their added value when studying the H-material interaction.



**VESS1 TC10 lecturers K. Verbeken, G. Gabetta and M. Elboujdaini**

Dr. Giovanna Gabetta (Consultant, Italy) in the lecture "Stress corrosion and corrosion fatigue" described the interaction between mechanical fatigue and corrosion with reference mainly to research in RPV steel and transport pipeline steels. Proposed models and mechanisms were described and the evidence found in industrial components was discussed.

Dr. Mimoun Elboujdaini (Advanced Consultancy Metallurgical & Corrosion Engineering, USA) in the lecture "Factors affecting the crack initiation and the crack propagation of pipeline steels transporting hydrocarbons" has drawn that the crucial step in materials degradation is the determination of the failure mechanism. As for example, environmentally assisted cracks in linepipe steels are initiated either as a result of stresses in combination with environmental effects, as in stress corrosion cracking, or as a result of trapped hydrogen in the steel. The complexity of both (SCC and HE) cracking phenomena results from their dependence on multiple metallurgical, mechanical, and environmental parameters that may all influence both crack initiation and propagation.

The lecture "Corrosion management of carbon steel materials in sour gas" by Dr. Magdy

Girgis (Corrosion Advisor Shell, Canada) outlined sour gas degradation mechanisms and the challenges related to proactive measures to mitigate corrosion; corrosion monitoring, the use of lined carbon steel materials and some case histories. Also, the lecture covered the challenges related to establishing Key Performance Indicators (KPI's) which are the key factors to prevent main events such as pinhole leaks. In addition, the lecture also covered the ON-PLOT activities which related to processing sour gas prior to sales or injection into the formation. Participants gained an understanding of gas treating and gas dehydration facilities, proper material selection and integrity operating window (IOW).



**VESS1 TC10 lecturers M. Girgis and H. Nykyforchyn**

The lecture "Hydrogen assisted degradation of structural steels in service conditions" was delivered by Prof. Hryhoriy Nykyforchyn (Karpenko Physico-Mechanical Institute of the NAS of Ukraine). The mechanism, stages and features of material degradation as a result of long-term combined influence of stresses and hydrogen were discussed. The methods for evaluating the degradation degree of steels were presented.

In addition, a mini TC10 Meeting was arranged in the framework of the 1<sup>st</sup> Virtual ESIS Summer School (VESS1) day devoted to discussing the future activity of the ESIS TC10 Committee on Environmentally Assisted Cracking and hydrogen Embrittlement. In particular, the possibility of organizing the next TC10 Meeting in the second part of 2021 in Lviv, Ukraine was discussed.

*Jesús Toribio  
Hryhoriy Nykyforchyn*

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## **TC11: High Temperature Mechanical Testing**

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**ESIS TC 11** held a **meeting** on 25.11.2020 via webex. It was planned to be held in

Linköping, Sweden, but travelling was not possible due to the European Covid-19 travel restrictions. The most important issue to discuss was the organisation of the already postponed Creep conference ECCC2021 which is planned to be held in Edinburgh in Scotland on 20-23 Sept 2021, see also [www.eccc2020.com](http://www.eccc2020.com). Different options have been discussed how the conference could be held but not decided.

The publications submitted to the **4th TMF-Workshop 2019** are published in the International journal of Fatigue. The review process is finished. 10 papers have been published but currently only with doi numbers. The final publication with page numbers is missing but expected soon. We are very happy that the publication process has been improved by Elsevier so that a publication has been possible within a time gap of less than one year. This is a great progress of Elsevier compared to the publication of the papers after the 3rd TMF-Workshop in 2016.

The temperature measurement working group of TC11 has not been met. However, long term temperature drift measurements of thermo couples type N and K are being continued.

**The next TC 11 meeting** is planned for 22nd April 2021 in Nottingham, UK, or via webex. The ECCC2021 organising committee will meet in February 2021 as well, probably via webex.

*Hellmuth Klingelhöffer*

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## TC12: Risk Analysis And Safety Of Large Structures And Components

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### Statutes and activities of ESIS Technical Committee No.12 (TC12) - December 2020

#### 1. Name

TC12: RISK ANALYSIS AND SAFETY OF LARGE STRUCTURES AND COMPONENTS

**Chairpersons:** Aleksandar Sedmak, José António Correia and Vladimir Moskvichev

**Secretaries:** Abílio de Jesus, Elena Fedorova and Snežana Kirin

#### 2. Objectives of TC12

(2.1) **Special Issue of Engineering Failure Analysis** entitled "**Risk Analysis and Safety of Complex Structures and Components – IRAS 2021**" (Guest Editors: Aleksandar Sedmak, José António Correia and Vladimir Moskvichev).

(2.2) Organisation of the **Virtual 2<sup>nd</sup> International Conference on Risk Analysis and Safety – Complex Structures and**

**Components (IRAS 2021)**, Belgrade, Serbia, 2021. Chairpersons: Aleksandar Sedmak (University of Belgrade, Serbia), José António Correia (University of Porto, Portugal) and Vladimir Moskvichev (Siberian Federal University, Russia).

(2.3) Organisation of the **Virtual Conference on Renewable Energies and Ocean Technologies (V-REOTECH 2021)**, Porto, Portugal, 2021. Chairperson: José António Correia (University of Porto, Portugal).

#### 3. Achievement of objectives

(3.1) **Special Issue of International Journal of Fatigue** entitled "**Fatigue of Metals**" (2020) (Guest Editors: José Correia, Abílio De Jesus, Grzegorz Lesiuk, Miguel Muñoz-Calvente, Rui Calçada), with papers selected from those presented at the XIX International Colloquium on Mechanical Fatigue of Metals (ICMFM19), held in Porto, Portugal, September 10-12, 2018.

(3.2) **Special Issue of Engineering Fracture Mechanics** entitled "**Fracture and Crack Growth**" (2020) (Guest Editors: José Correia, Abílio De Jesus, Grzegorz Lesiuk, Shun-Peng Zhu), with papers selected from those presented at the XIX International Colloquium on Mechanical Fatigue of Metals (ICMFM19), held in Porto, Portugal, September 10-12, 2018.

(3.3) **Special Issue of Engineering Failure Analysis** entitled "**Risk Analysis and Safety of Complex Structures and Components – ESIS-TC12 / IRAS 2019**" (Guest Editors: Aleksandar Sedmak, José António Correia, Shun-Peng Zhu, Vladimir Moskvichev).

(3.4) **Special Issue of Procedia Structural Integrity** entitled "**First International Symposium on Risk Analysis and Safety of Complex Structures and Components (IRAS 2019)**" (Guest Editors: Abílio M.P. De Jesus, António A.R. Henriques, José M.F. Castro, Pedro Montenegro, Rui A.B. Calçada).

(3.5) Organization of the **ESIS-TC12 symposium** within the **1<sup>st</sup> Virtual European Conference on Fracture (VCMF)**, chaired by Aleksandar Sedmak, José António Correia, Vladimir Moskvichev, 29 June – 1 July, 2020.

(3.6) Organization of the **ESIS-TC12 seminar** within the **1<sup>st</sup> Virtual ESIS Summer School (VESS1)**, chaired by Aleksandar Sedmak, José Correia, Vladimir Moskvichev, Elena Fedorova, Abílio De Jesus, 14 July, 2020.

(3.7) Organization of the **Virtual Conference on Mechanical Fatigue (VCMF)**, chaired by José A.F.O. Correia, University of Porto, Portugal, 9-11 September 2020.

*Aleksandar Sedmak  
José António Correia  
Vladimir Moskvichev*

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## TC14: Integrity of Biomedical and Biological Materials

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1. Thematic Symposium “**Integrity of Biomedical and Biological Materials**” was organised by Technical Committee 14 on 29 June 2020 within the framework of the 1st Virtual European Conference on Fracture.

Nine lectures presented in this Symposium covered diverse topics related both to biological materials (fracture of collagen; adaptation of human trabecular bone; viscoelastic properties of tendons; fatigue of trabecular structures) and biomedical materials (hydroxyapatite/magnesium composites; materials for dental fillings; ceramic coatings for dental alloys; degradation of porous components; fatigue fracture of prostheses), while an overview on mechanics of biomaterials was presented in the Keynote Lecture by ESIS TC14 Chair Prof. Vadim V. Silberschmidt. Videos of presentations delivered at Symposium could be found at [here](#).

A Special issue “**Damage and Fracture of Biomedical Materials**” of the **Journal of the Mechanical Behavior of Biomedical Materials** published by Elsevier that also includes a selection of papers presented at this Thematic Symposium is in preparation, with Prof. Silberschmidt as its Guest Editor.

2. ESIS TC14 also organised a topical day **Biomedical and Biological Materials** within the framework of the 1<sup>st</sup> Virtual ESIS Summer School – VESS1 on 6 July 2020, with 20+ young researchers participating in it. The programme of this day included lectures by the leading scientists from Oxford University, UK; University of Belgrade, Serbia; Loughborough University, UK and University of Zaragoza, Spain, presenting overviews of synchrotron tomography and diffraction analysis of bones; structural integrity of hip implants and endothelial monolayers; in-stent restenosis; bioprinting and 3D-printed polymers for biomedical applications. The day was concluded with a final test for participants.

*Vadim V. Silberschmidt*

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## TC15: Structural Integrity of Additively Manufactured Components

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The main event of TC15 is the conference ESIAM. Some information are reported below.

### ESIAM21

### Call for abstract is open for ESIAM 2021

Welcome to ESIAM21 [www.esiam.eu](http://www.esiam.eu)

The Second European Conference on Structural Integrity of Additively Manufactured Materials (ESIAM21) will be hosted by TU Wien in Austria. Due to Covid infection we will later communicate (in January) if the event will be carried out in presence or digitally.

### Aim of ESIAM21.

Structural integrity, i.e. the fracture and fatigue strength of additively manufactured materials and components is becoming increasingly important with the technology's transition towards major industrial utilization. The conference will provide an overview over current scientific knowledge and stimulate ideas for future research directions in this emerging field. Peer-reviewed contributions will be in the form of a 20-minute presentation or a poster.

**Background.** Additive manufacturing (AM) techniques offer the potential to economically fabricate customized parts with complex geometries in a rapid design-to-manufacture cycle. Before benefits can be explored in critical load bearing applications, the basic understanding of the mechanical and functional behavior of these materials must be substantially improved at all scales. In particular, a better understanding of fracture and fatigue performance is key. The conference will shed light on the basic physical phenomena of fatigue and fracture of AM materials and develop effective criteria for the design of unprecedented high performing components for next generation automotive, aerospace and biomedical applications.

**Conference Papers.** Peer reviewed publications from conference contributions and discussions will appear in the proceeding of the conference published in **Procedia Structural Integrity**. Extended versions of selected papers will be invited for Special Issues in ESIS affiliated journals.

**Dedicated Section in ECF23** A special section dedicated to TC15 is planned during ECF23, European Conference on Fracture 2022, Funchal, Madeira, Portugal, <https://www.ecf23.eu/>

A collaboration with TC18 and TC3 will be increased in the next years.

*Filippo Berto*

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## TC17: Non Destructive Evaluation

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I would like to inform you a new university course in Hungary which combines NDT and structural integrity assessment.

Administratively, it is not a direct ESIS TC-17 activity but, concerning its substance, it could certainly be interesting for ESIS members.

### **NDT integrity engineering course in Hungary**

In the University of Debrecen, the largest Hungarian university, a unique, two-semester postgraduate engineering course has been launched with participation of 17 students, in October 2020. The concept of the course is the initiation of the Academia NDT International because the NDT related high education is among the Academia's highest priority tasks. The course has been prepared and being implemented in cooperation of the university and the Hungarian Association for Non-destructive Testing.

NDT integrity engineering combines materials science with fracture mechanics to engineer a non-destructive evaluation process that would guarantee safety and reliability, or integrity, of engineering structures and components. It is primarily focussing on non-destructive testing / evaluation methods. Its knowledge basis encompasses all disciplines which contribute to establish any integrity related decision.

The lectures are delivered by leading professors of the university as well as recognised engineers from the industry. In completing the laboratory exercises, some firms interested in both NDT technology development and service provision and also NDT users take part.



**The organizers at the course opening (from left to right: Prof. L. Toth, Dr. T. Mankovits and Prof. P. Trampus).**

More information:

[https://hirek.unideb.hu/hu/hir/20201020\\_hiany\\_potlo-kepzes-muszaki-karon](https://hirek.unideb.hu/hu/hir/20201020_hiany_potlo-kepzes-muszaki-karon)

*Peter Trampus*

### **TC18: Structural Integrity Of Welded Joints**

TC18 is a new ESIS Technical Committee dedicated to Structural Integrity of Welded Joints. That hot research topic is still fundamental in many industrial strategic engineering applications. Recent advances in manufacturing processes have allowed to improve the fracture and fatigue strength of welded connections but still a lot can be done in this research field which has a high impact on large civil structures, mechanical components and a large variety of products at different scale levels.

In this scenario, the main goal of ESIS TC18 is to shed light on the physical phenomena of fatigue and fracture of welded joints and develop effective criteria for the design of simple and complex welded connections under static and cyclic loading. Particular attention will be focused on the interaction between manufacturing parameters and the structural integrity of weldments which is a fundamental aspect for the proper design and realization of complex structures. Numerical modeling aimed at predicting residual stresses and distortions as well as advanced techniques for protecting against corrosion (as hot dip galvanization) will be also considered. Emphasis will be given to the effects of residual stresses on the fatigue strength. Finally, recent progresses in multi-material joining will be considered, as well.

TC18 intends to:

- monitor the most important advances in the field,
- constantly provide an update state of the art about the design of welded joints,
- generate guidelines aligned with the advances in the manufacturing processes and post-treatments able to improve the structural performances of welded joints.
- organize events dedicated to the addressed topic.

Coming soon, TC18 is going to organize a dedicate biannual conference (ESIAM) together with TC15 (Structural Integrity of Additive Manufactured Components) and joint events in collaboration with ASTM.

Last but not least, ESIS TC18 is dedicated to the memory of Prof. Stojan Sedmak who strongly contributed to ESIS and Prof. Paolo Lazzarin who greatly enhanced the knowledge on the fatigue assessment of welded joints by using local approaches.

*Paolo Ferro  
Øystein Grong  
Aleksandar Sedmak  
Filippo Berto*

## 2020 ESIS virtual events – VECF1 & VESS1

Due to the Covid-19 crisis, the ECF23 scheduled in June 2020 (Funchal, Madeira, Portugal) was postponed to 2022. For the first time in the ESIS history, the ESIS Executive Committee directly organized the biennial event with a virtual approach. Using the Google Suite platform, two different virtual events were organized:

- the 1<sup>st</sup> Virtual European Conference on Fracture – VECF1 (June 2020);
- the 1<sup>st</sup> Virtual ESIS Summer School – VESS1 (July 2020).

Concerning the VECF1, the ESIS ExCo decided to follow an innovative approach to the organization of the conference. All the videorecorded presentations were collected and published in the ESIS YouTube channel, allowing to the participants to watch all of them before the conference. Two different websites were published. The first one (<https://www.vecf1.eu/>) was used to spread the information concerning the event and to collect the presentations and the papers. Instead, the access to the second one (<https://sites.google.com/structuralintegrity.eu/vecf1-presentations/home>) was restricted to the registered participants allowing them to find all the videopresentations organized in sessions. During the VECF1, all the speakers were requested to hold a really short presentation with the core of their work, and, after that, the discussion was immediately open. The conference was undoubtedly a success, considering that it was organized in a few months. The numbers are:

- 9 plenary speakers;
- 17 session with 321 presentations;
- more than 300 participants from 38 countries;

In addition, about 320 new videopresentations were published in the ESIS YouTube channel, (that has now 1250 subscribers):  
<https://www.youtube.com/c/EuropeanStructuralIntegritySociety/>!

This great success is only due to a great Community, thanks to the efforts of the Executive Committee and of all the Technical Committees that organized many sessions in the frame of the VECF1;

Focusing the Summer School (VESS1), almost all the ESIS Technical Committees were involved in the organization of the activities... the result was the largest Summer School ever organized by ESIS, scheduled on eleven days,

with about 70 speakers and with more than 150 registered participants. Also in this case, almost all the presentations are now available in the ESIS YouTube channel.

In conclusion, it is confirmed that a “simple” pandemic is not able to stop ESIS, being a more and more living and vibrant community.

*Francesco Iacoviello*

### **Final Report VECF1 & VESS1** **1st Virtual European Conference on Fracture**

3 days, 308 participants from 38 countries (10 non European countries);



#### **Plenary lectures:**

9 presentations (9 videos)

**TC3** - Fracture and fatigue in presence of cracks or stress concentrators:

20 presentations (19 videos)

**TC4** - Fracture and fatigue of polymers and polymer composites ...:

21 presentations (21 videos)

**TC7** - Engineering Failure Analysis:

23 presentations (23 videos)

**TC8** - Numerical Methods for Fracture:

38 presentations (38 videos)

**TC10** - Environmentally Assisted Cracking & Hydrogen Embrittlement:

5 presentations (5 videos)

**TC12** - Risk Analysis and Safety of Complex Structures and Components:

17 presentations (17 videos)

**TC14** - Integrity of Biomedical and Biological Materials

10 presentations (9 videos)

**TC15** - Additive Materials

19 presentations (19 videos)

### Applications of the Theory of Critical Distances

17 presentations (17 videos)

### Bonding and Welding

25 presentations (25 videos)

### Dynamics of fracture and structural transformations

22 presentations (22 videos)

### Energy Methods for Fracture and Fatigue Assessment

10 presentations (10 videos)

### Experimental Mechanics

34 presentations (34 videos)

### Fatigue

14 presentations (13 videos)

### Mixed mode fracture and fatigue

5 presentations (5 videos)

### Multiaxial Fatigue and Fracture

9 presentations (9 videos)

### Peridynamics and Other non-Local Methods for Damage and Fracture Analysis

14 presentations (14 videos)

### Recent advances in metamaterials

3 presentations (2 videos)

### Viscoelastic Behaviour of Materials

6 presentations (6 videos)

321 presentations (317 videos)

### 1st Virtual ESIS Summer School – VESS1

11 days, 143 registered participants, 73 paying participants (from 20 countries, 5 non european countries)



**TC3:** 4 presentations (4 videos)

**TC4:** 12 presentation (7 videos)

**TC6:** 6 presentations (6 videos)

**TC8:** 4 presentations (4 videos)

**TC9:** 8 presentations (7 videos)

**TC10:** 8 presentations (4 videos)

**TC12:** 7 presentations (6 videos)

**TC14:** 6 presentations (6 videos)

**TC15:** 3 presentations (3 videos)

**TC16:** 4 presentations (4 videos)

**TC17:** 5 presentations (5 videos)

56 videos in ESIS YouTube Channel

<https://www.youtube.com/playlist?list=PLqdhWx9LI8U7DJNegq0qoQI0aK8VXqExk>

*Aleksandar Sedmak*

### The Second School for Young Scientists «Monitoring of Natural and Technogenic Systems»

Winter School of Young Scientists was organized by the Perm Federal Research Center of the Ural Branch of the Russian Academy of Sciences in 16-18 November 2020.

The program of the School of Young Scientists is included in the plan of the Russian National Committee on Theoretical and Applied Mechanics, is approved by the Technical Committee 17 (Non-Destructive Assessment) of the European Society for Structural Integrity (ESIS), and the Russian Committee of ESIS and corresponds to the theme of the Perm scientific-educational center of world level «Rational subsoil use».



*Peter Trampus*

### **Advantages of being an ESIS member**

- ◆ participation in TC activities and access to TC documents;
- ◆ full on-line access to ESIS procedures;
- ◆ full on-line access to former EGF-ESIS books;
- ◆ support for ESIS activity.

**how to renew?**  
**see page 22 or**  
**[www.structuralintegrity.eu](http://www.structuralintegrity.eu)**

### **ESIS Website**

**[www.structuralintegrity.eu](http://www.structuralintegrity.eu)**

- **become a member of ESIS and take advantage of all the "Members Only" resources on this Web site**
- **register automatically as a Member and pay the fee by PayPal system**
- **obtain your username and password for accessing the private area for downloading EGF-ESIS books and Procedures**
- **exchange new ideas, advancements and documents**

### CALENDAR OF TC MEETINGS & ACTIVITIES

<b>TC3</b>	September 21-24, 2021	CP2021 - TC3 Meeting The 7th International Conference on Crack Paths CP2021	Rome, Italy	<a href="http://www.structuralintegrity.eu/esis/pdf/FlyerCP2021.pdf">http://www.structuralintegrity.eu/esis/pdf/FlyerCP2021.pdf</a>
<b>TC4</b>	September 26-30, 2021	9th International Conference on Fracture of Polymers, Composites and Adhesives (TC4)	Les Diablerets, Switzerland	<a href="https://www.elsevier.com/events/conferences/esistc4conference?utm_campaign=STMJ_28930_CONF_AB&amp;utm_medium=email&amp;utm_dgroup=28930_MAIN_NOAB_ST4_ALL&amp;utm_acid=114332639&amp;SIS_ID=0&amp;dgcid=STMJ_28930_CONF_AB&amp;CMX_ID=&amp;utm_in=DM556381&amp;utm_source=AC_25">https://www.elsevier.com/events/conferences/esistc4conference?utm_campaign=STMJ_28930_CONF_AB&amp;utm_medium=email&amp;utm_dgroup=28930_MAIN_NOAB_ST4_ALL&amp;utm_acid=114332639&amp;SIS_ID=0&amp;dgcid=STMJ_28930_CONF_AB&amp;CMX_ID=&amp;utm_in=DM556381&amp;utm_source=AC_25</a>
<b>TC15</b>	September 8-10, 2021	TC15 Meeting - Second European Conference on Structural Integrity of Additively Manufactured Materials	Wien, Austria	

### CALENDAR OF CONFERENCES & WORKSHOPS

September 21-24, 2021	The 7th International Conference on Crack Paths CP2021	Rome, Italy	<a href="http://www.structuralintegrity.eu/esis/pdf/FlyerCP2021.pdf">http://www.structuralintegrity.eu/esis/pdf/FlyerCP2021.pdf</a>
June 25-26, 2022	7th Summer School on "Fracture Mechanics and Structural Integrity"	Funchal, Madeira, Portugal	<a href="https://www.ecf23.eu/">https://www.ecf23.eu/</a>
June 27-July 01, 2022	23 <sup>rd</sup> European Conference on Fracture - ECF23	Funchal, Madeira, Portugal	<a href="https://www.ecf23.eu/">https://www.ecf23.eu/</a>

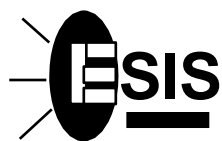
## ESIS Procedures and Documents

(free available for ESIS Members at [www.structuralintegrity.eu](http://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.

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



European Structural Integrity Society

**2021**

## Membership Application Form

**1<sup>ST</sup> JANUARY 2021 to 31<sup>ST</sup> DECEMBER 2021**

All members will be registered as Individual Members and will receive the ESIS Newsletter, at least once a year, by electronic delivery to the provided e-mail address.

Membership Fees should be paid either by bank transfer or by Credit Card or by PayPal 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 2021 and send the ESIS Newsletters to the address stated below (in BLOCK CAPITALS please).

Payment details.

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 2019 membership number.

☐

Enclosed is a PayPal payment receipt/details

**OR**

☐

Enclosed is a copy of bank transfer for € 30 (Euros The bank is: Uncredit banca

The name of the beneficiary is: **ESIS (European Structural Integrity Society)**

the coordinates are:

IBAN: **IT22 N 02008 01160 000020016279**

BIC SWIFT Code: **UNCRITM1AG0**

**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:





Exp  
Date:



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Surname: \_\_\_\_\_ Name \_\_\_\_\_ Title(s) \_\_\_\_\_

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e-mail: \_\_\_\_\_ Tel No: \_\_\_\_\_

Fax No: \_\_\_\_\_

Signature:

Date:

For ESIS records purposes please give the numbers of the ESIS Technical Committees in which you are most interested

Technical Committee(s):

All ESIS Procedures and books are free for ESIS Members at  
[www.structuralintegrity.eu](http://www.structuralintegrity.eu)

**Please return this form to:**

ESIS Treasurer  
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](http://www.structuralintegrity.eu)