

**ESIS Video recordings**

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**1st Virtual ESIS  
Summer School**

# 1<sup>st</sup> Virtual ESIS Summer School – VESS1

Due to the COVID-19 pandemia, in 2020 the Summer School organized in the frame of ECF23 (Funchal, Madeira, Portugal) was postponed to 2022. The 1<sup>st</sup> Virtual ESIS Summer School – VESS1 was held online (July 2020).

## Organizing Committee

Francesco Iacoviello	(Università di Cassino e del Lazio Meridionale, Italy)
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Željko Božić	(University of Zagreb, Croatia)
Leslie Banks-Sills	(Tel Aviv University, Israel)

## VIDEO-PRESENTATIONS

Presentation title	Authors	DOI
<b>Chairman: Vadim V. Silberschmidt</b>		<b>ESIS TC14 “Integrity of Biomedical and Biological Materials”</b>
Combined synchrotron tomography and diffraction analysis of the structure and deformation of ovine rib bone	A.M. Korsunsky	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.1">https://doi.org/10.53254/ESISTUBE.VESS1.1</a>
Different numerical strategies to simulate the structural integrity of endothelial monolayers	J.M. García Aznar, M.J. Gómez Benito	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.2">https://doi.org/10.53254/ESISTUBE.VESS1.2</a>
Mechanistic prediction of in-stent restenosis based on computer modelling of stent deployment, tissue damage and growth	L. Zhao, R. He	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.3">https://doi.org/10.53254/ESISTUBE.VESS1.3</a>
3D printed polymers for biomedical applications	V. V. Silberschmidt	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.4">https://doi.org/10.53254/ESISTUBE.VESS1.4</a>
Bioprinting an engineering perspective	A. Gleadall	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.5">https://doi.org/10.53254/ESISTUBE.VESS1.5</a>
Structural integrity and life of hip implants	A . Sedmak, A. Milovanovic	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.6">https://doi.org/10.53254/ESISTUBE.VESS1.6</a>
<b>Chairman: Jacques Besson</b>		<b>ESIS TC8 “Numerical Methods”</b>
Models for brittle fracture	A. Jivkov	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.7">https://doi.org/10.53254/ESISTUBE.VESS1.7</a>
Models for ductile fracture	J. Hure	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.8">https://doi.org/10.53254/ESISTUBE.VESS1.8</a>
Non local models for fracture	G. Hutter	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.9">https://doi.org/10.53254/ESISTUBE.VESS1.9</a>
Dynamic Fracture	N. Bonora	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.10">https://doi.org/10.53254/ESISTUBE.VESS1.10</a>
<b>Chairwoman: Sabrina Vantadori</b>		<b>ESIS TC03 “Fatigue of Engineering Materials and Structures</b>
Friendly introduction to fatigue	E. Habtour	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.11">https://doi.org/10.53254/ESISTUBE.VESS1.11</a>
Fretting fatigue an overview	J. A. Araújo	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.12">https://doi.org/10.53254/ESISTUBE.VESS1.12</a>
Phenomenological probabilistic models for assessment and prediction in fracture and fatigue	A. Canteli	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.13">https://doi.org/10.53254/ESISTUBE.VESS1.13</a>
Fatigue design of welded joints	A. Campagnolo	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.14">https://doi.org/10.53254/ESISTUBE.VESS1.14</a>
<b>Chairmen: Zohar Yosibash, Dominique Leguillon</b>		<b>ESIS TC16: “Finite Fracture Mechanics”</b>
Introduction to the Coupled Criterion of FFM	D. Leguillon	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.15">https://doi.org/10.53254/ESISTUBE.VESS1.15</a>
Edge and vertex singularities in 3D elastic domains and computation of edge-stress-intensity-functions	Z. Yosibash	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.16">https://doi.org/10.53254/ESISTUBE.VESS1.16</a>
FFM from static to fatigue failure	P. Cornetti, A. Sapora	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.17">https://doi.org/10.53254/ESISTUBE.VESS1.17</a>
Practical application of the coupled criterion CC of FFM	I.G. García	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.18">https://doi.org/10.53254/ESISTUBE.VESS1.18</a>

Presentation title	Authors	DOI
Chairman: J. Dusza, P. Hvizdoš		<b>ESIS TC6: “Ceramics”</b>
Micro Nano mechanical testing of advanced ceramics	J. Dusza	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.19">https://doi.org/10.53254/ESISTUBE.VESS1.19</a>
Deformation and fracture of high-entropy carbide grains during various micro/nanomechanical testing	T. Csanádi	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.20">https://doi.org/10.53254/ESISTUBE.VESS1.20</a>
Finite element modeling of cohesive and adhesive cracking in the hard coating/softer substrate system during nanoindentation and scratch testing	F. Lofaj	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.21">https://doi.org/10.53254/ESISTUBE.VESS1.21</a>
Development of boron carbide graphene platelets ceramics prepared by different processing technologies	R. Sedlák	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.22">https://doi.org/10.53254/ESISTUBE.VESS1.22</a>
Mechanical and tribological properties of TiB <sub>2</sub> SiC and TiB <sub>2</sub> SiC GNP ceramic composites	A. Kovalčíková	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.23">https://doi.org/10.53254/ESISTUBE.VESS1.23</a>
Tribology of ceramic materials scratch, friction, and wear properties	P. Hvizdoš	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.24">https://doi.org/10.53254/ESISTUBE.VESS1.24</a>
<b>Chairmen: Andreas J. Brunner, Bamber Blackman</b>		<b>ESIS TC4: “Polymers, Polymer composites and Adhesives”</b>
Environmental stress cracking in polymers	L. Andena	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.25">https://doi.org/10.53254/ESISTUBE.VESS1.25</a>
Fracture of adhesive joints	B.Blackman, A. Vassilopoulos	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.26">https://doi.org/10.53254/ESISTUBE.VESS1.26</a>
Fracture in polymers: Basic concept and testing methods	F. Baldi, A. Salazar	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.27">https://doi.org/10.53254/ESISTUBE.VESS1.27</a>
Rubbers, far beyond simple fracture mechanics why, how & what	S. Agnelli, C. Marano, B. Schrittester	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.28">https://doi.org/10.53254/ESISTUBE.VESS1.28</a>
Notching for fracture testing of polymers	R. de Oliveira	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.29">https://doi.org/10.53254/ESISTUBE.VESS1.29</a>
2D crack delamination in composites	A. Vassilopoulos	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.30">https://doi.org/10.53254/ESISTUBE.VESS1.30</a>
Fatigue in polymers	G. Pinter	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.31">https://doi.org/10.53254/ESISTUBE.VESS1.31</a>
<b>Chairperson: Aleksandar Sedmak, José Correia, Vladimir Moskvishv, Elena Fedorova, Abilio De Jesus</b>		<b>ESIS TC12: “Risk analysis and safety of large structures and components”</b>
Reliability and safety of complex technical systems	V. Moskvichev	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.32">https://doi.org/10.53254/ESISTUBE.VESS1.32</a>
Overview on the generalization of fatigue models based on local damage parameters	J.A. Correia, A. de Jesus	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.33">https://doi.org/10.53254/ESISTUBE.VESS1.33</a>
Risk based assessment of pressure vessel integrity and life	A. Sedmak, S. Kirin	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.34">https://doi.org/10.53254/ESISTUBE.VESS1.34</a>
Failure behavior of protective coatings and oxide scales for energy and aircraft applicatio	E. Fedorova	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.35">https://doi.org/10.53254/ESISTUBE.VESS1.35</a>
Fatigue reliability design and assessment under uncertainty	Shun-Peng Zhu	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.36">https://doi.org/10.53254/ESISTUBE.VESS1.36</a>

Presentation title	Authors	DOI
A probabilistic framework for evaluation the probabilistic S N fields for riveted joints	J.A. Correia, A. de Jesus	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.37">https://doi.org/10.53254/ESISTUBE.VESS1.37</a>
<b>Chairmen: Jesús Toribio, Hryhoriy Nykyforchyn</b>		<b>ESIS TC10 - Environmentally assisted cracking</b>
Non traditional techniques to study EAC phenomena	M. Cabrini	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.38">https://doi.org/10.53254/ESISTUBE.VESS1.38</a>
Environmentally assisted fatigue crack growth in gaseous atmospheres	G. Henaff	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.39">https://doi.org/10.53254/ESISTUBE.VESS1.39</a>
Stress corrosion and corrosion fatigue	G. Gabetta	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.57">https://doi.org/10.53254/ESISTUBE.VESS1.57</a>
Hydrogen assisted degradation of structural steels in service conditions	H. Nykyforchyn	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.40">https://doi.org/10.53254/ESISTUBE.VESS1.40</a>
The potential of dedicated experimental methodologies to evaluate H/mat interaction	K. Verbeken	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.41">https://doi.org/10.53254/ESISTUBE.VESS1.41</a>
<b>Chairman: Liberato Ferrara, Giuseppe Andrea Ferro, Luciana Restuccia</b>		<b>ESIS TC9 - Concrete</b>
Extrusion based Digital Construction Opportunities and Challenges	V. Mechtcherine	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.42">https://doi.org/10.53254/ESISTUBE.VESS1.42</a>
Biochar concrete mortar history, milestones, challenges and opportunities	Kua Harn Wei	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.43">https://doi.org/10.53254/ESISTUBE.VESS1.43</a>
Advanced cement based composites: an asset for civil engineering to face the XXI century societal and economical challenges. The approach of the H2020 Project ReSHEALience	L. Ferrara	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.44">https://doi.org/10.53254/ESISTUBE.VESS1.44</a>
Smart Cementitious Materials New Functionalities and Nanotechnology	Maria S. Konsta-Gdoutos, D. Panagiotis	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.45">https://doi.org/10.53254/ESISTUBE.VESS1.45</a>
Concrete under nanoscope	K. Sobolev	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.46">https://doi.org/10.53254/ESISTUBE.VESS1.46</a>
Foamed Concrete: properties, applications and development of a fascinating construction material	D. Falliano	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.47">https://doi.org/10.53254/ESISTUBE.VESS1.47</a>
Multiscale testing and modelling of cement based materials	E. Schlangen	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.48">https://doi.org/10.53254/ESISTUBE.VESS1.48</a>
<b>Chairman: Peter Trampus</b>		<b>ESIS TC17 - Non destructive evaluation</b>
Advanced ultrasonic techniques for answering high NDE performance requirements	Dr. R. Martinez Ona	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.49">https://doi.org/10.53254/ESISTUBE.VESS1.49</a>
Non destructive evaluation as a foundation of structural integrity assessment	P. Trampus	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.50">https://doi.org/10.53254/ESISTUBE.VESS1.50</a>
NDT reliability and probability of detection, POD	I. Virkkunen	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.51">https://doi.org/10.53254/ESISTUBE.VESS1.51</a>
The middle wave infrared thermography in non destructive testing	L. Krstulovic-Opara	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.52">https://doi.org/10.53254/ESISTUBE.VESS1.52</a>

Presentation title	Authors	DOI
The role of the NDT results in reliability assessment of engineering structures	J. Dudra, R. Erdei, L. Tóth	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.53">https://doi.org/10.53254/ESISTUBE.VESS1.53</a>
<b>Chairman: Filippo Berto</b>		<b>ESIS TC15 - Structural integrity of additive manufactured components</b>
Mechanical properties of additive manufacturing materials	A. Milovanović, A. Sedmak	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.54">https://doi.org/10.53254/ESISTUBE.VESS1.54</a>
Introduction to AM of polymer components	Chao Gao	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.55">https://doi.org/10.53254/ESISTUBE.VESS1.55</a>
Introduction to AM of metallic material	J. Razavi	<a href="https://doi.org/10.53254/ESISTUBE.VESS1.56">https://doi.org/10.53254/ESISTUBE.VESS1.56</a>



