

Enrico Salvati,

BSc, MSc, DPhil, MIET, CEng

Associate Professor

Editor – Materials Today Communications (MTCOMM)

Co-director – SIMED research group

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine, Via delle Scienze 208, Udine, 33100, Italy

Information

Email: enrico.salvati@uniud.it (institutional); enrico.salvati@outlook.com (personal)

Web:



Phone: +39 3498636209 (ITA); +44 7745002309 (UK)

ID numbers: Scopus: 56735691200; ResearcherID: B-9243-2018; ORCID: 0000-0002-2883-0538;

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Introduction

Enrico's research mainly focuses on the evaluation and modelling of fatigue and fracture problems in processed, welded and additively manufactured metallic materials, as well as the evaluation of residual stress and material's defects across the length scales. He is also interested in biomaterials with hierarchical structure (i.e., human teeth and bamboo). Enrico is often involved in industry-oriented projects aimed at assessing the performance of engineering components and structures, particularly for aerospace, propulsion and biomedical applications.

A wide range of experimental techniques, at length-scales ranging from macro- to nano-scale, are usually involved in his experimental works (e.g. synchrotron-based x-ray, electron/ion microscopy and related techniques, static and cyclic load-controlled tests etc). He exploits Finite Element Methods for the numerical modelling of results from experiments and for the establishment of predictive tools. Machine Learning-based approaches are also involved in his research for two fundamental objectives: developing physics-guided model frameworks; identifying hidden patterns and influencing factors.

Alongside research activity, Enrico enjoys teaching and engaging students. In fact, he is currently course leader for the papers: 1) Principles and Methods for Mechanical Design – Master's degree in mechanical engineering; 2) Green Machine Design – Master's degree in management engineering.

Enrico is Editor of Materials Today Communications (Elsevier, 2021 IF: 3.662) and member of the editorial board of: Forces in Mechanics (Elsevier), Engineering Reports (Wiley) and Materials Design & Processing Communications (Wiley). He is also an active reviewer, to date, he reviewed 300+ papers for more than 60 international peer-reviewed journals.

1. Research Interest

Fracture Mechanics; Fatigue; Design; Residual Stress evaluation and modelling; Thermomechanical problems; Metals; Welding; Biomaterials; Composites; Micromechanical Analysis of Material Properties; FEM analysis; Machine Learning; Synchrotron X-ray and Neutron based techniques; Focused Ion Beam; Microscopy.

2. Current Appointments

- **Associate Professor** at the University of Udine
- Co-director of SIMED lab at the Polytechnic Department of Engineering and Architecture (DPIA) of the University of Udine
- Editor, Materials Today Communications (Elsevier)
- Holder of the **italian habilitation for Full Professorship (*Abilitazione Scientifica Nazionale, 1^a Fascia, Settore concorsuale 09/A3*)**
- Member of the Executive Committee of Italian Group of Fracture (IGF)
- Member of the Institute of Engineering and Technology (IET)
- Member of *Associazione Italiana Analisi delle Sollecitazioni* (AIAS)
- Member of the academic board for the PhD in Industrial and Information Engineering (IIE) – University of Udine
- Member of Trinity College, University of Oxford
- Member of the IIE PhD teaching board
- Advisor for structural design of Formula SAE project at the University of Udine

3. Research Experience

Associate Professor,

March 2023 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Probabilistic approaches for structural integrity evaluation of metallic materials; Multiscale residual stress evaluation; Phase-Field modelling of fracture processes; Mechanical response of metals with emphasis on additively manufactured materials; Neutron Diffraction studies; Computed Tomography analysis

Assistant Professor,

March 2020 – March 2023

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Structural Integrity assessment of structures and materials; Residual Stress analysis; Phase-Field modelling of fracture processes; Characterisation and modelling of materials produced by advanced manufacturing processes; Synchrotron X-ray based studies.

Postdoctoral Research Fellow,

January 2017 – March 2020

Department of Engineering Science, University of Oxford (United Kingdom)

- Analysis of residual stress influence in fatigue fracture propagation in mechanical components and assemblies, for instance Additively Manufactured (AM) compressor blades and Friction Stir Welded (FSW) joints; numerical (FEM) reconstruction of stress fields using the eigenstrain approach.
- Development of FIB-based nanoscale techniques for residual stress evaluation in coatings.
- Multi-modal and multi-scale characterisation of materials, with particular emphasis on metals.
- Analysis of damaging processes in biomaterials showing hierarchical structure.
- Shape memory effect in Polylactic Acid (PLA) polymers.

DPhil Researcher,

May 2014 – May 2017

Department of Engineering Science, University of Oxford (United Kingdom)

- Development of the FIB-DIC micro ring-core for the residual stress measurement at the (sub)micron-scale, supported by EU funded ISTRESS project. Responsible for: FEM analyses, residual stress back calculation, Round-Robin activities, reporting and presenting achievements at meeting.
- Research on the residual stress and plasticity-induced crack closure contribution in fatigue fracture propagation at the occurrence of an overload or underload.
- FEM eigenstrain modelling of residual stress in a wide range of applications.
- Consultancy activity with industrial partners

Visiting Researcher,

September 2013 – December 2013

School of Engineering, University of Plymouth (United Kingdom)

- Microstructural characterisation (EBSD and SEM)
- Fatigue performance assessment of Friction Stir Welded (FSW) tubes.

Research Associate,

January 2012 – April 2014

Department of Engineering, University of Ferrara (Italy)

- Fatigue failure analysis in mechanical components and structures using non-linear FEM simulations, analytical approaches and experimental testing.
- Design of complex auto-frettagged parts as a part of a joint industry project aimed at the design of a high-pressure pump; development of weight functions for cracks.
- Fatigue testing and failure analysis of diesel engine mechanical components.

4. Teaching Experience

Associate Professor,

March 2023 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Course leader for the papers:
 - Principles and Methods for Mechanical Design (taught in Italian - Principi e Metodologie della Progettazione Meccanica). Master's degree in Mechanical Engineering.
 - Green Machine Design (taught in English). Master's degree in Management Engineering

Assistant Professor,

March 2020 – March 2023

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Course leader for the papers:
 - Principles and Methods for Mechanical Design (taught in Italian - Principi e Metodologie della Progettazione Meccanica). Master's degree in Mechanical Engineering.
- Short course on *Finite Element in Engineering* for PhD students.

Lecturer,

Lady Margaret Hall College, University of Oxford (United Kingdom)

September 2018 – March 2020

Department of Engineering Science, University of Oxford (United Kingdom)

September 2017 – March 2020

Balliol College, University of Oxford (United Kingdom)

September 2019 – December 2019

- Delivering departmental tutorial sessions for the 3rd year **B8 Materials paper**, including: Metals, Ceramics, Polymers and Composites.
- From September 2018, delivering college lectures/tutorials. 1st year "**P3 Structures and Mechanics**", 2nd year "**A3**

Structures Materials and Dynamics” and 3rd year “**B2 Engineering in Society**”.

- Responsible for marking tutorial sheets, assess the progress of the students and production of the end of term reports.
- Further details can be found [here](#).

Laboratory Demonstrator,

September 2016 – June 2018

Department of Engineering Science, University of Oxford (United Kingdom)

- Assisting with the delivery of a pre-designed 2nd Year A5 Dynamics practical course. Helping students to run their experiments and analyse the results.
- Responsible for marking student reports and carrying out oral examination.

Assistant Lecturer,

October 2012 – April 2014

Department of Engineering, University of Ferrara (Italy)

- Delivering lectures concerning Mechanics of Materials, Failure Analysis and practical applications of Finite Element Method, ranging from 3D modelling to result interpretation in the context of multi-axial fatigue design. Class size: ~30 students.
- Responsible helping students to develop their project and marking the final report.

5. Supervision Experience

Research fellows’ supervisor,

May 2021 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Principal supervisor of Dr. Manish Kumar (2021 - Present);
- Principal supervisor of Dr. Marco Beltrami (2022 -Present);

PhD students’ supervisor,

October 2020 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Principal supervisor of Alessandro Tognan (2020 - Present);

Students’ project supervisor,

March 2020 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- Principal supervisor of postgraduate students at their final year’s project (MSc). Supervised students (n.11): Emanuele Avoledo (March 2023); Luca Vallar (March 2023); Federico De Nardi (March 2023); Matteo Zanon (January 2023); Simone Dreon (October 2022); Giovanni Florian (October 2022); Federico Franco (July 2022); Francesco Menegatti (January 2022); Alex Scandino (March 2021); Martino Segat (March 2021); Ivan Moro (October 2020);
- Co-supervisor of postgraduate students at their final year’s project (MSc). Supervised students (n.1): Stefano Bacchetti (January 2022);
- Principal supervisor of postgraduate students at their final year’s project (BSc). Supervised students (n.3): Mattia Pegolo (July 2022); Vincenzo Anniballo (July 2021); William Pigato (July 2021)

PhD College Advisor,

October 2019 – September 2020

Lady Margaret Hall College, University of Oxford (United Kingdom)

- College advisor of four doctorate students

3rd Year Projects and Graduate Students Supervisor,

May 2014 – March 2020

Department of Engineering Science, University of Oxford (United Kingdom)

- Providing support to undergraduate students during their final project. Some of them are in collaboration with renowned research institutes and companies (i.e. Rolls-Royce and CERN)
- Helping and providing guidance to young graduate students in our research group.

6. Projects

PRIN 2020 - Multiscale modelling/characterisation and fabrication of nanocomposite ceramics with improved toughness (CONCERTO),

April 2022 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

University of Roma Tré (Italy)

Engineering department “Enzo Ferrari”, University of Modena and Reggio Emilia (Italy)
Department of Applied Science and Technology (DISAT), Polytechnic University of Turin (Italy)
Department of Surgical Sciences, University of Turin (Italy)

- Role: Unit Coordinator
- Responsible for the numerical modelling of fracturing mechanisms in the studied materials
- Grant n. 2020BN5ZW9

Phase-Field modelling of fatigue problems,

October 2020 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)
Department of Civil and Industrial Engineering, University of Pisa (Italy)

- Delamination problems
- Residual stress influence

Hybrid metal extrusion & bonding (HYB),

September 2020 – Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)
Department of Mechanical and Industrial Engineering (MTP), Norwegian University of Science and Technology (NTNU) (Norway)

- Residual Stress evaluation
- Microstructural characterisation

Dental Implant Insertions Simulation,

December 2020 - Present

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)
University Federico II of Naples (Italy)

Tackling human dental caries by multi-modal correlative microscopy and multi-physics modelling,

January 2017 – December 2021

Department of Engineering Science, University of Oxford (United Kingdom)

- Responsible for the FEM modelling and microscopy characterisation of human caries evolution
- Project funded by the EPSRC grant: EP/P005381/1
- Collaboration with the University of Birmingham

WELX – Single crystal Ni-base welded turbine blades,

September 2018 – March 2020

Department of Engineering Science, University of Oxford (United Kingdom)

- Analysis of residual stress in single crystal Ni base superalloy blades subjected to welding process. In collaboration with Rolls-Royce.
- FEM simulation of the welding process and modelling of residual stress.

CDI – Coherent Diffraction Imaging,

July 2017 – December 2019

Departments of Physics & Engineering Science, University of Oxford (United Kingdom)

- Responsible for the design of experiment setup and sample preparation using Focused Ion Beam.

MARS – Manufacturing Additive Residual Stress,

May 2014 – May 2017

Department of Engineering Science, University of Oxford (United Kingdom)

- Responsible for the modelling and evaluation of residual stress arising after Additive Manufacturing and shot peening processes in Ni-base superalloy compressor airfoil.

ISTRESS - FIB micro-milling for intrinsic stress evaluation at the micron scale,

May 2014 – December 2016

Department of Engineering Science, University of Oxford (United Kingdom)

- Responsible for the research activity conducted in Oxford on the development of an experimental technique for residual stress evaluation at the micron-scale.
- Collaboration with a number of European partners: University of Roma Tré (Italy), NPL (UK), FAU (Germany), Fraunhofer (Germany), ETH (Switzerland), University of Brescia (Italy), University of Darmstadt (Germany), TESCANA (Czech Republic), Bosh (Germany), Rolls-Royce (UK) and THALES (France).
- Funded by the grant EU FP7 ISTRESS. Grant n. 604646

Luverhulme Rotary Friction Welds,

January 2013 – May 2014

Department of Engineering, University of Ferrara (Italy) & School of Engineering, University of Plymouth (United Kingdom)

- Carried out fatigue testing and micromechanical characterisation of Friction Stir Welded (FSW) aluminium tubular joints.
- Design of clamping system for sample testing
- Project funded by the International Network Grant IN-2012-107

Crankshafts and connecting rods fatigue life assessment,

January 2012 – May 2014

Department of Engineering, University of Ferrara (Italy)

- Fatigue test of mechanical components for automotive application; Effect of shot peening. Consultancy activity with F.C.A. group (Italy).

High-Pressure Fuel Pump Design,

January 2012 – December 2013

Department of Engineering, University of Ferrara (Italy) & O.M.T. Turin (Italy)

- Responsible for the design of manifold for the containment of highly pressurised fluid. Cracks nucleation and propagation prediction; Material characterisation; Design against fluid leakage; Dynamics of rotating systems.
- Presentation and discussion of results at meetings.

7. Editorial and Review activities

Editor,

- [Materials Today Communications](#), Elsevier (2021 IF:3.662)

October 2021 – Present

[Topical area of Structural Materials](#)

Processed **800+ papers** to date

Academic Editor,

- [Material Design & Processing Communications](#), HIndawi (previously Wiley)

June 2020 – Present

Processed **7 papers** to date

Member of Editorial Boards,

- [Forces in Mechanics](#), Elsevier

June 2021 – Present

Processed **80+ papers** to date

- [Engineering Reports](#), Wiley

May 2019 – Present

- [Frontiers in Metals and Alloys](#), Frontiers

October 2021 – Present

Topical Advisory Panel Member,

- [Materials](#), MDPI (2021 IF:3.748)

October 2020 – Present

Manuscripts Reviewer,

January 2016 – Present

- To date, he has **peer-reviewed 300+ manuscripts** for the following journals (n.62): Materials & Design, Theoretical and Applied Fracture Mechanics; Journal of Material Sciences; The Journal of Strain Analysis for Engineering Design; Strain; International Journal of Solids and Structures; International Journal of Fatigue; Engineering Fracture Mechanics; International Journal of Machine Tools and Manufacture; International Journal of Composite Structures; Fatigue & Fracture of Engineering Materials & Structures; Journal of Manufacturing Processes; Journal of Coating Technology and Research; Journal of Manufacturing and Materials Processing; Materials; Frattura ed Integrità Strutturale; Quantum Beam Science; Applied Sciences; Materials Characterization; Engineering Failure Analysis; Chinese Journal of Aeronautics; Journal of Vacuum Science and Technology – B; Engineering Reports; Coatings; Cellulose; Material Design & Processing Communication; Coatings; Metals; International Journal of Rock Mechanics and Mining Sciences; Acta Biomaterialia; Journal of Alloys and Compounds; Scientia Iranica: Journal of Applied and Computational Mechanics; Plos One; Progress in Natural Science: Materials International; journal of Crystal Growth; International Journal of Automotive and Mechanical Engineering; Materialia; Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science; Materials Today Communications; Mechanism and Machine Theory; Wood Science and Technology; Advanced Engineering Materials; Engineering Computations; International Journal of Pressure Vessels and Piping; Advanced Intelligent Systems; Journal of Marine Science and Engineering; Nanomaterials; Procedia Manufacturing; Heliyon; Welding International; Construction and Building Materials; Journal of the Brazilian Society of Mechanical Sciences and Engineering; Journal of Materials Research and Technology; Science Advances; Discover Mechanical Engineering;

Frontiers in Metals and Alloys; Advanced Science; Nuclear Inst. and Methods in Physics Research, B; BDI Open.

- Verified reviews can be checked [here \(Web of Science\)](#).

Project Reviewer

September 2018

- Reviewed a two-year project proposal for the National Science Centre (NCN) (Poland)

Guest Editor,

[Forces in Mechanics – Elsevier](#)

October 2020 – Present

[Materials Today Communications – Elsevier](#)

December 2021 – February 2023

[Materials & Design – Elsevier](#)

February 2018 – May 2018

Editorial Meetings,

October 2019

Wiley Editor Symposium, October 3rd & 4th, 2019 - Park Inn, Heathrow, London

- Invited as an Early Career Researcher for a round table meeting with Wiley Editors-in-Chief.

Top Reviewer of 2019 for Fatigue & Fracture of Engineering Materials & Structures (FFEMS)

- More details in the Awards section

8. Additional Relevant Experience

Participation as a member of evaluation committees

- Postdoctoral Researchers / Research Assistant positions
Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)
 - “Crack propagation modelling in polycrystalline materials”. Role: Head of the evaluating committee. *March 2023*
 - “Probabilistic approaches based on Machine Learning for fatigue failure evaluation”. Role: Head of the evaluating committee. *December 2022*
 - “Sviluppo di algoritmi di pianificazione di traiettorie per sistemi robotici”. Role: Member of the evaluating committee. *March 2022*
 - “Attività di ricerca ed organizzative per il supporto e promozione del Laboratorio LAMA FVG attraverso lo sviluppo di sistemi meccatronici innovativi”. Role: Secretary of the evaluating committee. *December 2020*
 - “Advanced Aided Design and Verification of Mechanical Structures and Components Using the Phase-Field Method”. Role: Head of the evaluating committee. *November 2020*
- PhD PNRR admission *September 2022*
Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)
Role: Secretary (registrar) of the evaluating committee.
- PhD viva external examiner
 - *Department of Mechanical and Industrial Engineering (MTP), Norwegian University of Science and Technology (NTNU) (Norway)*; Candidate: Ashley Amanda Freeman *October 2021*
 - *University of Ferrara (Italy)*; Doctorate in Industrial Engineering, XXXIII cycle *March 2021*
- Examiner for the qualification to practice the profession of Engineer *June 2021 – November 2021*
University of Udine (Italy)
- Final exam examiner for an IFTS course *July 2021*
Enaip Friuli Venezia Giulia
Course entitled “Tecniche di installazione e manutenzione di impianti civili e industriali- PLC & Industry 4.0”.

Test Marker,

November 2016 – January 2020

University of Oxford (United Kingdom)

- Marking for the British Physics Olympiad (BPhO) and Physics Aptitude Test (PAT)

Product Developer,

June 2006 – September 2008

Vega s.r.l. Mirabello – Ferrara (Italy)

- Employed by the company for three summer placements during three years from 2006 to 2008 to work on sheet metal forming and other mechanical components, producing technical drawings and manufacturing schedules.

9. Education

DPHil in Engineering Science, Solid Mechanics,

University of Oxford (United Kingdom)

Trinity College (United Kingdom)

- Thesis title: *Residual stress measurement and modelling at the micro-scale*
- Supervisor: Prof. Alexander M. Korsunsky

May 2014 – August 2017

MSc in Mechanical Engineering,

University of Ferrara (Italy)

- Thesis title: *Numerical methods for fatigue analysis on complex structure*
- Supervisor: Prof. Paolo Livieri

October 2009 – October 2011

BSc in Mechanical Engineering,

University of Ferrara (Italy)

- Thesis title: *Numerical analysis of welded joints under fatigue loading*
- Supervisor: Prof. Paolo Livieri

October 2006 – June 2009

10. Extracurricular courses

Developing Teaching and Learning (DLT) programme

September 2019

- Developing Teaching and Learning (DLT) programme. Enrico received the SEDA PDF Supporting Learning Award. The award is aligned to the UK Professional Standards Framework (UKPSF) for Teaching and Supporting Learning in Higher Education, at Descriptor 1.

Associazione Italiana Analisi delle Sollecitazioni (AIAS) Summer Schools

- Advances Methods for Material testing
- Advances in Fracture Mechanics: Theory and Applications
- Methods and techniques of experimental stresses analysis

June 2015

June 2013

June 2012

11. Skills

Experimental

- Microscopy techniques for material characterisation: SEM, STEM, FIB, EBSD, EDX and nano-indentation.
- Synchrotron X-ray techniques: XRD, WAXS, SAXS, GISAXS, Tomography (CT), XRR, EDS.
- Uni- and multi-axial fatigue testing.
- Digital Image Correlation (DIC)

Computing

- Non-linear structural FE simulation: Abaqus, ANSYS and COMSOL (subroutine writing).
- FEM numerical solution of Partial Differential Equations (PDE)
- Analytical and numerical analysis: Matlab, Mathematica and Excel.
- 2D/3D modelling: Solid Edge, SolidWorks, Autocad Mechanical.
- Interpretation of X-ray technique data: GenX and Fit2D.
- Other software: LabView, Simulink

Time management & Team Working

- Successfully led 6 experiments as Team Leader and participated to further 30+ long-lasting experiments at Diamond Light Source Synchrotron (DLS) Harwell (UK) and at European Synchrotron Radiation Facility (ESRF) Grenoble (France).
- Responsible for the management of a number of research activities within the research group.

12. Professional Memberships, Affiliations & Qualifications

Member of the [Executive Committee](#) of Italian Group of Fracture (IGF)

February 2023 - Present

Italian Scientific Qualification (Abilitazione Scientifica Nazionale ASN)

October 2022 - Present

- Habilitation for Full Professorship in Italy in the sector 09/A3, first-tier. (*Abilitazione Scientifica Nazionale, 1^a Fascia, Settore concorsuale 09/A3* (Expiring on: 07/10/2032))

Member of AIAS (Associazione Italiana per l'Analisi delle Sollecitazioni)	<i>September 2020 - Present</i>
Member of Trinity College, University of Oxford	<i>April 2014 - Present</i>
Member of The Institution of Engineering and Technology	<i>February 2018 – Present</i>
Chartered Engineering (CEng) Registration	<i>August 2018 - Present</i>
Member of Lady Margaret Hall College, University of Oxford	<i>September 2018 – September 2020</i>

13. Awarded Grants: Projects and Consultancy

Beamtimes experimental sessions *January 2023- Present*
ANSTO, Australian Centre for Neutron Scattering, Sydney (Australia)

- As Principal Investigator (PI), successfully obtained n.2 beamtimes for residual stress evaluation in additively manufactured materials and Friction Stir Welding tubes.

ThermoKey S.p.A. *September 2021 – Present*

- Industrial project on structural analysis of a heat exchanger Role: Principal Investigator (PI)

Coordination of an Assistant Professorship grant – Seal of Excellence PNRR *December 2022 – Present*

Coordinated and supported Prof. Manish Kumar’s proposal to obtain a 3-year Assistant Professorship (RTD-a). Project: A Phase Field Framework to Predict Fatigue Cracking Incorporating Residual Stresses and Hydrogen Effects. Role: Project Coordinator (PC)

Departmental Strategic Plan *October 2022 – Present*

Polytechnic Department of Engineering and Architecture (DPIA), University of Udine (Italy)

- 3-year departmental funds awarded to conduct interdisciplinary research activities. Project focus: Mechanical behaviour of cellular materials obtained through additive manufacturing. Role: Principal Investigator (PI)

LimaCorporate S.p.A. *November 2021– Present*

- Industrial project on fatigue analysis of alloys fabricated via EBM and SLM manufacturing technology. Role: Principal Investigator (PI). Co-funded by a POR-FESR call.

Support for Horizon Europe Initiatives (UNIUD) *January 2022 - Present*

- Grant to attract and promote international postdoctoral researchers and applying for a Marie Skłodowska-Curie (MSCA) Postdoctoral Fellowship. Role: Principal Investigator (PI)

PRIN 2020 *April 2022 – Present*

- Work Package Leader and Unit Coordinator (UC) of the project entitled: Multiscale modelling/characterisation and fabrication of nanocomposite ceramics with improved toughness (CONCERTO). Grant 2020BN5ZW9.
- Awarded grant to the unit: **153 k€**, (out of 910 k€ - entire project)

European Social Fund (ESF) *July 2020 – April 2022*

- A project proposal devoted on the development and application of the Phase-Field method for the simulation of fracture was funded. Principal Investigator (PI)

Beamtimes experimental sessions *October 2015 - March 2020*

DLS, Diamond Light Source, Harwell (United Kingdom)

- As Team Leader (TL) scientist, to date he has been awarded for n.6 beamtimes at Diamond Light Source Synchrotron facility. This experimental funding is estimated to be worth **over 120 k€**.

14. Awards

Standford top 2% scientists *2022 – Present*

Included in: September 2022 data-update for "Updated science-wide author databases of standardized citation indicators". The selection is based on the top 100,000 scientists by c-score (with and without self-citations) or a percentile rank of 2% or above in the sub-field.

Top Reviewer for Fatigue & Fracture of Engineering Materials & Structures (FFEMS) – (x2)

December 2020 & August 2022

Personally selected by Youshi Hong, Editor-in-Chief of Fatigue & Fracture of Engineering Materials & Structures (Wiley) to be recognized as a top reviewer of **2019** and **2021**

Tenure Track Assistant Professorship (declined)

January 2020

Department of Management Engineering, University of Bergamo, Bergamo (Italy)

Howse, Ruffles, and Parker Award for Best Doctorate Paper

December 2018

Rolls-Royce, Derby (UK)

His paper entitled "Eigenstrain reconstruction of residual strains in an additively manufactured and shot peened nickel superalloy compressor blade" was selected as the winner of this award for the period 2016-2017. He received £500 as a prize.

Lectureship (declined)

April 2018

School of Engineering, University of Plymouth, Plymouth (United Kingdom)

He won the competitive selection process for a **Lecturer permanent position**. He received a job offer from this department.

Award for Excellence (x2)

March 2018 & March 2020

Engineering Science Department, University of Oxford, Oxford (United Kingdom)

Award designed to reward only those whose contribution to the work of the University is greater than that of the majority of their peers (10% of the employees): it is to reward exceptional performance. He received this award twice, in 2018 and 2020, which was worth a total amount of £1300.

Postdoctoral Fellowship (declined)

May 2017

IMT – Schools for advanced Studies Lucca, Lucca (Italy)

He won the competitive selection process for a **one-year postdoctoral fellowship**. He received a job offer from this department before completing his doctorate at the University of Oxford.

15. Visiting periods (more than 3 days)

NTNU, Norway

9th - 13th May 2022

Host: Prof. Filippo Berto

TU Delft, The Netherlands

30th March – 6th April 2023

Host: Prof. Luca Laurenti

16. Conference organisation and participation as a member of the committee

International Conference on Key Engineering Materials (ICKEM23)

24th – 26th March 2023

- Steering Committee member

International Conference on Key Engineering Materials (ICKEM22) and International Workshop on Materials and Design (MatDes 2022), Udine

18th – 20th March 2022

- Conference co-organiser, [Conference Co-chair](#) and chairman of keynote lectures.

17. Journal Issue Covers

- **Experimental Mechanics Special Issue cover**

Advances in Residual Stress Technology in honor of Drew Nelson. On the Cover: Contour Method with Uncertainty Quantification: A Robust and Optimised Framework via Gaussian Process Regression. *Exp Mech* 62, 1243 (2022). <https://doi.org/10.1007/s11340-022-00899-7>

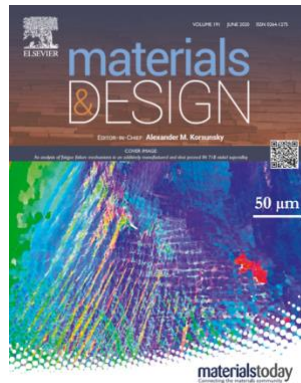


Featured work:

A. Tognan, L. Laurenti, E. Salvati. *Contour Method with Uncertainty Quantification: A Robust and Optimised Framework via Gaussian Process Regression.* (2022). *Experimental Mechanics*. DOI: 10.1007/s11340-022-00842-w

- **Materials & Design Volume cover**

Volume 191, June 2020, 108815. [https://doi.org/10.1016/S0264-1275\(20\)30349-X](https://doi.org/10.1016/S0264-1275(20)30349-X)



Featured work:

E. Salvati, A. J. G. Lunt, C. P. Heason, G. J. Baxter, A. M. Korsunsky. *An analysis of fatigue failure mechanisms in an additively manufactured and shot peened IN 718 nickel superalloy.* (2020) *Materials & Design*. DOI: 10.1016/j.matdes.2020.108605

18. Talks at Conferences and Workshops

1. E. Salvati. *Previsione vita a fatica basata sull'analisi dei difetti attraverso un modello di calcolo physics-informed machine learning. (A Defect-Based Physics-Informed Machine Learning Framework for Fatigue Finite Life Prediction).* 51° Convegno Nazionale Associazione Italiana Analisi Sollecitazioni (AIAS). (Padova, Italy). 7th-9th September 2022.
2. E. Salvati. *A Machine Learning Approach to Finite Fatigue Life Prediction in Additively Manufactured Metals.* European Conference on Fracture (ECF23). (Funchal, Portugal). June 27th – July 1st, 2022
3. E. Salvati. *Residual Stress Evaluation and Microstructural Characterisation of an AA6082 butt weld manufactured through the Hybrid Metal and Extrusion Bonding (HYB) Technique.* 18th European Mechanics of Materials Conference (EMMC18). (Oxford, United Kingdom) April 4th - 6th, 2022.
4. E. Salvati. *Propagazione di Cricche in Presenza di Tensioni Residue con il Metodo Phase-Field (Phase-Field Method for Crack propagation in residual stress fields).* Virtual Conference 50° Convegno Nazionale Associazione Italiana Analisi Sollecitazioni (AIAS). 1-3 September 2021, Virtual.
5. E. Salvati. *Attività e Competenze UNIUD. Giornata di Studio sulla Biomeccanica.* Gruppo di lavoro dell'Associazione Italiana Analisi Sollecitazioni (AIAS). 14 May 2021, Virtual
6. E. Salvati. *Un'Analisi dell'Interazione Cricca-Inclusione con il Metodo Phase-Field (An analysis of Crack-Inclusion Interaction Using the Phase-Field Method).* Virtual Conference 49° Convegno Nazionale Associazione Italiana Analisi Sollecitazioni (AIAS). 2-4 September 2020, Virtual
7. E. Salvati. *Crack Tip Stress Field Analysis of Crack Surface Contact and Opening During In Situ Wedge Loading of Human Enamel.* International Conference on Fracture and Damage Mechanics FDM2019. (Rhodes, Greece). 16th - 18th September 2019.
8. E. Salvati. *Type I, II and III Residual Stress Analysis Using FIB-DIC micro-ring-core and Crystal Plasticity FEM Modelling.* International Conference on Fatigue Damage of Structural Materials – FDSM12. (Hyannis, MA, USA). 16th-21st September 2018.
9. E. Salvati. *Nanostructural aspects of human dental enamel and their evolution due to dental caries.* Nanoinnovation 2018. (Rome, Italy). 11th-14th September 2018.
10. E. Salvati. *Plasticity-Induced Crack Closure and Residual Stress Contributions to Fatigue Crack Retardation Following an Overload.* Oxford Solid Mechanics Junior workshop on "Plasticity and Fracture Mechanics". (Oxford, UK). 31st January 2018.
11. E. Salvati. *FIB-DIC method for the evaluation of the residual stress at the (sub)micron-scale.* Postgraduate Experimental Mechanics conference - PGEM 2016. (Oxford, UK). December 2016.

12. **E. Salvati.** *Mechanical Microscopy of Surface Modification Induced by Electro-Discharge machining.* SMT30. (Milan, Italy). June 2016.
13. **E. Salvati.** *Fatigue and Fracture behaviour of AZ31b Mg Alloy Plastically Deformed by Constrained Groove Pressing in the Presence of Overloads.* European Conference on Fracture - ECF21. (Catania, Italy). June 2016.
14. **E. Salvati.** *EBSD Investigation of Fatigue Crack Propagation Past a Crack Closure Due to Overload.* Crack Path 2015, (Ferrara, Italy). September 2015.
15. **E. Salvati.** *Residual Stress Measurement on Shot Peened Samples using FIB-DIC.* SEM Annual Conference and Exposition on Experimental and Applied Mechanics - SEM2015. Costa Mesa (California, USA). June 2015.

19. Talks at Seminars, Symposia and Invited Lectures

1. **E. Salvati.** *Early Career Researcher for a round table meeting with Wiley Editors-in-Chief.* Wiley Editor Symposium. Invited by Wiley. (Park Inn, Heathrow, London). 3rd & 4th October 2019.
2. **E. Salvati.** *Fatigue Crack Growth Modification Following the Occurrence of an Overload.* Invited seminar at University of Udine (Udine, Italy). 25th July 2019.
3. **E. Salvati.** *Residual Stress Induced Deformation at the (sub)micron-scale.* Internal Seminar at Harvard University. (Cambridge, MA, USA). 20th September 2018.
4. **E. Salvati.** *Multiscale Analysis of Bamboo Deformation Mechanisms Following NaOH Treatment Using X-ray and Correlative Microscopy.* Engineering Science Breakfast Seminar. University of Oxford (Oxford, UK) 1st February 2018.
5. **E. Salvati.** *High-Cycle Fatigue Strength Assessment of Welded Structures Using Numerical Methods.* Invited Lecture. UKAEA, Culham Science Centre, (Culham, UK), 21st June 2017.
6. **E. Salvati.** *Eigenstrain Reconstruction of Residual Strains in an Additively Manufactured and Shot Peened Nickel Superalloy Compressor Blade.* Engineering Science Breakfast Seminar. University of Oxford (Oxford, UK) 12th January 2017.
7. **E. Salvati.** *Multi-Beam Laboratory for Engineering Microscopy (MBLEM) - Structure and Stress Analysis in Materials from Aerospace Alloys to Bulk Metallic Glasses.* LIMA User Meeting, University of Oxford. (Oxford, UK), April 2016.

20. Other Information

- Passionate about: Motorsports, Photography (<https://500px.com/enricosalvati>), Informatics, Travelling, Technology and Sport.

April 2023