



Marco Alfano

Nationality: Italian |

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WORK EXPERIENCE

2023 – CURRENT Reggio Emilia, Italy

FULL PROFESSOR DIPARTIMENTO DI SCIENZE E METODI DELL'INGEGNERIA, UNIVERSITY OF MODENA AND REGGIO EMILIA

Research interests

Mechanics of materials (polymers, polymer-matrix composites, and adhesives)

Mechanics of interfaces and adhesion

Architected materials for adhesion control

Computational fracture mechanics

Structural lightweighting

Joining of 3D-printed materials

Surface modification using pulsed lasers

Application of machine learning to material analysis and process optimization

Teaching interests

Mechanical design

Mechanics of solid bodies

Mechanics of composite materials

Finite element methods

Fracture mechanics

Adhesion science and technology

2023 – CURRENT Waterloo, Canada

ADJUNCT PROFESSOR DEPARTMENT OF MECHANICAL AND MECHATRONICS ENGINEERING, UNIVERSITY OF WATERLOO

2019 – 2023 Waterloo, Canada

ASSOCIATE PROFESSOR DEPARTMENT OF MECHANICAL AND MECHATRONICS ENGINEERING, UNIVERSITY OF WATERLOO

2011 – 2019 Rende, Italy

RICERCATORE (ASSISTANT PROFESSOR) DIPARTIMENTO DI INGEGNERIA MECCANICA, ENERGETICA E GESTIONALE, UNIVERSITY OF CALABRIA

2010 – 2011 Jeddah, Saudi Arabia

RESEARCH FELLOW DIVISION OF PHYSICAL SCIENCES AND ENGINEERING, KING ABDULLAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

2007 – 2010 Rende, Italy

POST-DOCTORAL FELLOW DIPARTIMENTO DI INGEGNERIA MECCANICA, ENERGETICA E GESTIONALE, UNIVERSITY OF CALABRIA

2009 Urbana, United States

FULBRIGHT RESEARCH SCHOLAR DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING, UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

EDUCATION AND TRAINING

2007 Rende, Italy

PHD (MATERIALS AND STRUCTURES) University of Calabria

2003 Rende, Italy

LAUREA IN MECHANICAL ENGINEERING University of Calabria

PUBLICATIONS

List of publications



See the author [profile](#) generated by Scopus

CONFERENCES AND SEMINARS

Invited seminars (selected)

Crack control in adhesive joints using 3D printed architected substrates, Danish Center for Applied Mathematics and Mechanics (DCAMM), Aarhus University, Denmark, Giugno 24, 2024

Damage tolerant architected interfaces, Mechanical Engineering Graduate Seminar, KAUST, Thuwal, KSA, April 4th 2019.

Damage tolerant architected interfaces for adhesive bonded lightweight materials, Research Seminar, Department of Mechanical and Mechatronics Engineering, University of Waterloo, Waterloo, Canada, June 21st 2018.

Advanced strategies for joining metals and composites using adhesive bonding, Airbus Operations GMBH, Hamburg, Germany, February 27th 2017.

Adhesive Bonding of Advanced Materials: technology and applications, International Days, The Hochschule Bochum - Bochum University of Applied Sciences, Germania, November 28th 2016.

Enhancing structural integrity of adhesive bonds through pulsed laser surface micro-machining, Faculty of New Sciences & Technologies, University of Tehran, Tehran, Iran, February 14th 2016.

Improving adhesion and work of fracture through controlled surface heterogeneities. Research Seminar, LMAF, Institute of Mechanical Engineering, Ecole Polytechnique Federale de Lausanne, Switzerland, January 21st 2015.

Tailoring interfacial fracture of advanced materials through multi-scale surface modification. Research Seminar, TU/Dresden, Germany, December 10th 2014.

Adhesion in metallic multilayers using spatially heterogeneous surface properties. Research Seminar, Fraunhofer-IWS, Dresden Germania, December 9th 2014..

Enhancing adhesive bonding by laser surface irradiation: an integrated experimental-numerical approach, Khalifa University of Science, Technology & Research, Abu Dhabi, Emirati Arabi Uniti, October 19th 2011.

PROJECTS

Funded projects (selected)

2021: In pursuit of tough and damage tolerant adhesive bonded lightweight structures using material architecture, Natural Sciences and Engineering Research Council of Canada (NSERC), Discovery Grant Individual (DGI). [PI]

2020: Enabling toughening and damage tolerance in adhesive bonding of multi-material lightweight structures, Canada Foundation for Innovation (CFI), John R. Evans Leaders Fund (JELF). [PI]

2020: Enabling toughening and damage tolerance in adhesive bonding of multi-material lightweight structures, Ontario Research Fund (ORF), CFI's Leaders Opportunity Fund (JELF matching). [PI]

Increase of Strength of Interface Between liner and composite in HYdrogen tank, Grant, Commission of European Communities (Brussels) MERANET Network (<https://m-era.net>).

2018: Removing the bottlenecks in composite joint designs: ensuring mechanical performance and safety via engineered interfacial morphology, King Abdullah University of Science and Technology, Competitive Research Grant 7. [Co-PI]

2015: Campus Manufacturing. Funded by MIUR to Consorzio CALEF. [PI]

2013: Tailoring interfacial fracture of advanced materials through multi-scale surface modification (ADVMAT-ARUE), Regione Calabria, PO Calabria FSE 2017-2013 ASSE IV. [PI]

NETWORKS AND MEMBERSHIPS

Editorial Board Memberships

2022-current, Editorial Board Member, Materials Research Express (IOP Science).

2022-current, Associate Editor, Frontiers in Materials (Mechanics of Materials).

2018-current, Editorial Board Member, International Journal of Adhesion and Adhesives (Elsevier).

2015-current, Editorial Board Member, Journal of Adhesion Science and Technology (Taylor & Francis).

Please note that some information in this CV is summarized, and dates are indicative, with only starting and ending years provided

Reggio Emilia , 22 Jul 2024