Prof. Carlo SANTULLI

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EDUCATION

PhD in *Materials Science and Engineering* - University of Liverpool, 2000
Laurea (MSc) in *Chemical Engineering* - Università "La Sapienza"- Roma, 1991
Laurea (MA) in *Arts (Modern History)* - Università "La Sapienza"- Roma, 2001
MSc in *Environmental Decision Making* (EDM) - Open University, 2004
BSc (Open) in *Science* (courses in Natural Science and Environment), Open University, 2008
Classical High School - Liceo Classico "Francesco Vivona" – Roma, 1981

EMPLOYMENT HISTORY

9/2013-present	Associate professor	Università di Camerino
9/2012-8/2013	Contract professor	Università di Camerino
9/2006-8/2012	Associate professor	Università La Sapienza – Roma
		Seconda Università di Napoli (2008-2010)
11/2001-8/2006	Senior research fellow	University of Reading
11/99 - 10/2001	Research associate	University of Nottingham
10/98 -10/99	Research assistant	University of Liverpool
8/96-9/98	Researcher	Joint Research Centre- Ispra
1/96-7/96	Researcher	K.U. Leuven & Ecole des Mines -St. Etienne
1/94-12/95	Research grant holder	Joint Research Centre- Ispra
9/88-12/93	Research assistant	Università La Sapienza – Roma

PRINCIPAL AREAS OF INTEREST

Materials characterisation; Non-destructive inspection of materials; Materials sustainability; Waste management; Natural fibres; Biomimetics; DIY materials; Bioplastics; Bio-inspired design

LANGUAGES

Italian (mothertongue), excellent English and French, good German and Spanish

PUBLICATIONS

2 books, 184 journal papers, 19 invited chapters, 92 conference papers. H-index: 35 (32 from 2015) i-10: 90 (75 from 2015).

OTHER INFORMATION

Supervisor for 1 PhD project and 81 BSc projects and co-supervisor for 64 BSc, MSc and PhD projects, consultant for other 10 projects. External examiner for PhD thesis for Anna University (India), Poitiers University (France), Università Politecnica delle Marche and Università La Sapienza. Referee for over 50 scientific journals and a large number of international conferences. Referee on materials research projects for Department of Industry of Romania (UEFISCDI), of Poland, of Czech Republic, Austria, EPSRC (UK), and the Italian Ministry of Education (CINECA). Invited professor at UTM (Malaysia) and Université de Rouen.

Biography in "Who's Who in Science and Engineering" and "Who's Who in the World" (from 2003).

Editorial Board member: International Journal of Polymers and Technologies, Open Journal of Composite Materials, Malaysian Polymer Journal and E-Journal of Non-Destructive Testing. Editor of a special issue of Journal of Biobased Materials and Bioenergy (vol.6 n.4, 2012) and of Fibers (Plant fibers). Editor of Advanced Science and Engineering and Emerging Science Journal.

Professionally qualified as chemical engineer in Italy (1992).

Level 3 qualified in Acoustic Emission (non-destructive testing).

Co-editor of "Progetto Babele" (www.progettobabele.it) from 2002.

RESEARCH EXPERIENCE

9/2012- Università di Camerino

From 1st September 2012 I was contract professor of "Structural properties and performance of materials" in the School of Architecture and Design, then from 27th September 2013 associate professor of Materials Science and Technology in the same university.

In addition to some research themes developed in the previous period, in particular on natural fibre composites, the use of agrowaste for the production of nanocellulose, DIY materials ("material tinkering") and biomimetics and bioinspired design, some developments have been carried out on:

Thermal and mechanical characterisation of polymeric insulating materials for cables and accessories (contract with Università La Sapienza)

Characterisation of failure modes by impact and repair methods of polymer composites using acoustic emission (collaboration with Università di Bologna, Anna University and UTM – Kuala Lumpur)

Use of natural fibres and agrowaste for the production of structural materials (Université de Rouen)

9/2006-8/2012 Università di Roma- La Sapienza

In Rome I was working as an associate professor, lecturing on materials in different courses, for an average time of 12 hours a week, and being involved in research with two different Depts. of the University (Electrical Engineering and Materials Engineering). I am co-supervising a number of MEng and MSc students. I have a continuous collaboration from 2008 with Università di Perugia and a wide range of other collaborations with a number of universities, better detailed further down. In addition, for year 2008-09 and 2009-10, I have been contract professor in Seconda Università di Napoli (SUN), where I coordinate the research activities of the Hybrid Design Lab.

- Biomimetics and sustainable materials; bio-inspired design
- Plant fibre (flax, jute, hemp, phormium, celery, kenaf, okra, oil palm) and mineral fibre (basalt) composites (with oil-based and renewable matrices) and their hybrids with glass fibres: production, morphological, mechanical, thermal and electromagnetic characterization
- Polysaccharides (cellulose and chitin) based nanocomposites and keratin-based materials
- Use of waste for the production of sustainable materials
- Dynamical characterisation (impact, post-impact, indentation) and non-destructive testing of composites (acoustic emission, IR thermography) and metal hydrides
- Diatoms nanoindentation

11/2001-8/2006 University of Reading

In Reading my tasks included: carrying out research in different projects and disseminating the results of research through publications, presentations, conferences; demonstrating to final year students; marking and co-supervising undergrad Part 3 projects and lecturing (materials science and biomimetics).

- Air flow and frequency excitation response of mechanoreceptors on cricket cerci
- Impact properties and damage characterisation of flax fibre reinforced composites and glass/flax hybrid laminates
- Non-destructive quality control study on vegetable tissues (apples, avocados, mangoes, potatoes, tomatoes) for damage and over-ripeness control by signal analysis.
- Reconstruction of middle ear ossicular chain using Laser vibrometry (Guys & St. Thomas Hospital)
- Coupling between polyelectrolyte gels and polypropylene fibre braided structures, to reproduce worm's skin function in function of the creation of variable stiffness actuators
- Electro-active polymers for applications in artificial muscles (study for European Space Agency)
- Study of balsawood and composite materials properties using IR thermography

11/99 - 10/2001 University of Nottingham

My work in Nottingham was aimed at investigating design, analysis and impact absorbing characteristics of automotive thermoplastic composites (GMT, Twintex), an in particular the relation between moulding process and impact performance on automotive composite materials. I participated to the design and contributed to impact modelling of side impact beams, moulded then under my supervision by Symalit and Polynorm.

• Influence of compression moulding conditions on microstructure, void content, impact and mechanical

performance of commingled thermoplastic composites

- Impact damage characterisation through the infrared thermography technique
- Hole-in plate simulation of tensile behaviour of Twintex using ABAQUS
- Moulding and testing of demonstrator components for automotive applications

10/98-10/99 University of Liverpool

The main objective of my research project was the assessment of suitability of plant fibre composite (jute/polyester) for large volume applications, both in isolation and as a hybrid with E-glass fibre reinforced laminates.

My work involved comparing post-impact performance of jute fibre reinforced composites with E-glass fibre reinforced composites and experimental modelling of impact damage.

A consequent aim was developing a global method for the evaluation of impact damage on woven composites, involving the combined application of different monitoring techniques (acoustic emission, thermoelastic stress analysis and optical microscopy). The project was self-funded and self-designed over material supplied by Sistema Compositi.

- Post-impact residual properties and microscopic characterisation of impact and indentation damage of jute fibre woven composites compared with different E-glass fibre woven composites
- Impact damage assessment on composites using acoustic emission and thermal imaging (SPATE, Deltatherm)

8/96-9/98 Joint Research Centre- Ispra

In this period I was supervisor of a non-destructive testing laboratory. My activity included: research on materials characterisation, mainly on polymeric and metal matrix composites and shape memory alloys, using adiabatic thermal and acoustic emission; collaborations with other labs; preparation of research networks and research projects development.

I also carried out initial work on my PhD project involving impact characterisation on jute fibre and glass fibre woven composites by acoustic emission (AE) and partly sponsored by VALLEN GmBH, AE systems manufacturer.

- Thermal and acoustic emission for mechanical characterisation of shape memory alloys (Ni-Ti)
- Development and testing on a fibre optics acoustic emission sensor
- Application of acousto-ultrasonics and acoustic emission on glass/polyester bonded joints, including signal classification using neural networks
- Thermal damage analysis and acoustic emission localisation on honeycomb panels
- Real-time monitoring of tensile tests on carbon/epoxy laminates using acoustic emission and thermal emission, including measurement of yielding point of FRPC composites
- AE monitoring and SEM characterisation of normal and off-axis compression tests on titanium dental implants

4/96-7/96 Ecole des Mines -St. Etienne

Following the project started at K.U. Leuven, I concentrated on the use of IR thermography for damage monitoring.

- Detection of initiation and progression of delamination during fatigue tests on quasi-isotropic carbon-epoxy laminates using the infrared thermography technique
- Monitoring of damage initiation and progression on impacted quasi-isotropic carbon-epoxy plates following compression tests through infrared thermography

1/96-4/96 K.U. Leuven

Acquaintance and experimentation of new applications of non-destructive techniques (acoustic emission, IR thermography, edge replication, C-scan, X-rays) to characterise fatigue damage on carbon/epoxy composites.

- Fatigue monitoring on carbon/epoxy composites by acoustic emission, C-Scan and replicas
- Technical study and in-service monitoring of acoustic emission systems (work for the European Commission) with the aim to compare their reliability and performance

1/94-12/95 Joint Research Centre- Ispra

I was involved in a number of research projects on the use of non-destructive techniques for materials (mainly adhesive joints and metal matrix composites) characterisation.

• Experimental modelling of the cure process of Al/Al bonded joints by acoustic emission and ultrasonics and

verified through shear lap tests (in collaboration with ALENIA)

- Mechanical behaviour of metal matrix composites (Al/Al₂O₃) tensile and fatigue tests monitored by acoustic emission and SEM fractographs
- Pattern recognition on acousto-ultrasonic waveforms on steel bonded joints through neural networks (in collaboration with Centro Ricerche FIAT)
- Acoustic emission evaluation of temperature effects on thin ceramic (TiN, CN) layers for cutting materials (WC-Co) layers applied by PVD (pressure vapour deposition)
- Residual fatigue performance on carbon-epoxy unidirectional (90°) specimens by acoustic emission

9/88-12/93 Università La Sapienza – Roma

My research work involved <u>experimentation in laboratory and on field</u> with use of non-destructive techniques (acoustic emission, ultrasonics, thermography, image analysis) in support of mechanical and impact tests, and included a <u>six-months stage</u> in a composite materials industry (Sistema Compositi) to be trained about composite manufacturing (RTM, filament winding, pre-preg) and composite structures design (classical laminate theory)

- Impact damage and post-impact characterisation of stitched Kevlar/epoxy laminates by acoustic emission and image analysis
- VAMAS Round Robin on bending tests on yttria partially stabilised zirconia with acoustic emission energy measurements and crack localisation and SEM observations
- Group Bench Mark on acoustic emission on AE measurements during tensile tests on Carbon-BMI and Carbon/Epoxy, including measurement of Kaiser effect
- Acoustic emission and acoustoultrasonics during mechanical tests on welded composite joints
- Acoustic emission and thermography on compression tests of AI/AI perfect and defected honeycomb panels
- Atmospheric degradation monitoring by acoustic emission of two monumental statues in the Fontana di Trevi complex
- Quality evaluation on filament wound Kevlar-epoxy pressure vessels during hydraulic tests by acoustic emission and strain gauge measurements (MEng project)

LABORATORY ACTIVITIES AND TECHNIQUES

Mechanical testing (tensile, fatigue, bending, interlaminar strength, compression, impact, shear, hardness) Composites manufacturing (hand lay-up, filament winding, RTM, compression and injection moulding, extrusion) Polymeric gels characterisation (swelling rate, mechanical characterisation)

Adhesive joints: surface preparation to adhesion, cure cycling procedures and guidelines

Damage characterisation methods on composites (dye-penetrant enhanced radiography, edge replication technique) Design of composite structures with finite elements software (ABAQUS, MARC)

Thermal monitoring techniques (transient and passive thermography, adiabatic thermal emission, thermoelastic stress measurement) with analysis and treatment of images

Thermal characterisation of natural fibres (FTIR, TGA, DSC, DMA)

Traditional and quantitative acoustic emission (signal analysis and treatment, pattern recognition with neural network, acousto-ultrasonics) and ultrasonic C-Scan

Vibration measurements and LASER vibrometry

Optical and scanning electron microscopy

COLLABORATIONS WITH INDUSTRIES

Composite manufacturing industries (Symalit, Polynorm, Vetrotex, Parkhill Textiles, Security Composites, Sistema Compositi, NPSP, CB Compositi), plant fibres producers (Saneco, Ceres, Fidia)

End-users: aeronautical (Aermacchi, Alenia, SIAI Marchetti), automotive (Centro Ricerche FIAT, Ford), chemical (Acciaierie Bosco), electrical (Nexans) and food industries (Unilever)

Non-destructive testing systems manufacturers (Vallen, Physical Acoustic Corporation, Lambda Photometrics)

COLLABORATIONS WITH UNIVERSITIES AND RESEARCH CENTRES

UK (University of Liverpool, University of Reading, University of Portsmouth, University of Plymouth), Italy (Politecnico di Milano, Politecnico delle Marche, Università di Perugia, Università di Bologna, Università dell'Aquila, Università di Roma Tor Vergata, CNR-ISMAC), France (Université de Poitiers, Université de Rouen), Malaysia (USM), Bangladesh (Islamic University), India (Mahatma Gandhi University, Anna University), Canada (Laval University)

RESEARCH FUNDING

Preparation of a number of research projects (literature search, sourcing and keeping contacts with industries, structuring the project in tasks), including:

Place and year	Subject	Funding body
Camerino 2016	Ecotiles: introduction of construction and demolition waste	EC
	into clay tiles	
Rome 2011	Biocomposites for aeronautical interior components using	EC – FP7
	hemp	
Perugia 2010	Composite materials including local agrowaste (flax fibres,	Italian Govt. (FIRB)
	wheat bran)	
Napoli 2009	Bio-inspired design and material from renewable sources: Italian Govt. (FIF	
	sustainable innovation at the service of Made in Italy	
Reading 2003-05	Quality control via vibration tests on vegetable tissue	EPSRC
Reading 2003	Impact characterisation of plant fibre composites	EPSRC/BBSRC
Nottingham 2001	Pedestrian safety	EPSRC
Ispra 1996-7	Acoustic emission applications on composites	Industry
Rome 1992-3	Metal matrix composites for transport applications	EC-DGXII
Rome 1992	Non-destructive testing on polymer composites	EC-DGXII
Rome 1990	Performance of ceramics (Round Robin)	Italian Govt.

LECTURING EXPERIENCE

Title of module	Course	University and years	Hours/	Total
Waste management	Geoenvironmental resources and risks	Camerino 2018-19 and 2019-20	84	42
Environmental sustainability	Geoenvironmental resources and risks	Camerino 2019-20	42	42
Experimentation on innovative materials	Experimentation on innovative materials	Camerino 2015-16, 2016-17, 2017-18 and 2018-19	60-64	244
Eco-conception	Eco-conception	Rouen 2013-14	8	8
Hybridisation and composites	Aerospace materials technology	Sapienza 2013-14	2	2
Ecocompatible technologies	Industrial design laboratory 3	Camerino 2013-14 and 2014-15	50-60	110
Shape and performance of materials	Industrial design laboratory 1	Camerino 2012-13, 2013-14, 2014-15, 2015-16, 2016-17 and 2017-18	60	360
Elements of materials science	Experimentation on innovative materials	Camerino 2014-15	4	4
Hierarchisation and biomimetic product development	International PhD course in design and innovation	Seconda Università di Napoli (SUN) 2010-11, 2011-12 and 2012-13	2-3	7
Biomimetics and sustainability	Environmental requirements for design	SUN 2011-12	6	6
Plant fibres and bio-inspired structures	International PhD course in design and innovation	SUN 2010-11	4	4
Technical issues and standards for concrete	Materials control and standards	Sapienza 2009-10	26	26
Hybridisation and manufacturing techniques in composite materials	Composites science and technology	Sapienza 2009-10	4	4
Use of biopolymers as biomaterials	Biomaterials	Sapienza 2009-10	4	4
Mechanics for industrial design	Context and tools for machine design	SUN 2009-10	30	30
Biomimetic scaffolds	Biomaterials	Sapienza 2008-09 and 2009-10	2	4
The quality of materials for design	Materials technology and	SUN 2008-09 and 2009-10	30	60

	configuration			
Biodegradable polymers	Polymers science and technology	Sapienza 2007-08, 2008-09, 2009-10 , 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16	4-8	60
Non destructive control of electrical systems	High voltage techniques	Sapienza 2007-08, 2008-09, 2009-10, 2010-11, 2011-12, 2012-13 ad 2014-15	6	36
Use of silk as suture material and future developments	Biomaterials	Sapienza 2007-08, 2008-09 and 2009-10	2	6
Polymers durability	Materials durability	Sapienza 2006-07, 2007-08, 2008-09, 2009-10, 2010-11 and 2011-12	10	60
Plant fibre composites	Composites science and technology	Sapienza 2006-07, 2007-08, 2008-09, 2009-10, 2011-12, 2012-13, 2013-14, 2014-15 and 2015-16	4-12	76
Superconductivity and superconductive materials	High voltage techniques	Sapienza 2006-07	4	4
Superconductive and photovoltaic materials	Electrotechnics	Sapienza 2006-07	4	4
Electrical and magnetic materials	Electrotechnics	Sapienza 2006-07	6	6
Polymer actuators	MSc in biomimetics	Reading 2004-05	4	4
Introduction to materials science	Foundation year	Reading 2003-04	12	12
Non destructive control of composite materials	Composites science and technology	Sapienza 1996-97	2	2

PEER REVIEW (REFEREE FOR)

Acta Biomaterialia, Acta Metallurgica Sinica, Advanced Biomaterials, Advances in Mechanical Engineering, Aerospace Science and Technology, African Journal of Biotechnology, African Journal of Plant Science, African Journal of Agricultural Research, Arabian Journal of Science and Technology, Asian Journal of Applied Science and Technology, Atti della Fondazione Giorgio Ronchi, Bioresources, Brasilian Journal of Mechanical Engineering, Canadian Journal of Physics, Carbohydrate Polymers, Cellulose, Composites Part A and Part B, Composites Communication, Composites Science and Technology, Construction and Building Materials, Cosmetics, Educational Research and Reviews, Engineering Fracture Mechanics, Engineering Science and Technology: an International Journal, European Polymer Journal, Express Polymer Letters, Fibers, Indian Journal of Earth Science, Indian Journal of Materials Science, Indian Journal of Mechanical Sciences, Industrial Crops and Products, Industrial and Engineering Chemistry Research, International Journal of Biological Macromolecules, International Journal of Engineering Science and Technology, International Journal of Fatigue, International Journal of Impact, International Journal of Materials Research, Iranian Polymer Journal, Journal of Adhesion Science and Engineering, Journal of Aerospace Engineering, Journal of American Oil Chemists, Journal of Applied Physical Science International, Journal of Applied Polymer Science, Journal of Biomedical Research, Journal of Cleaner Production, Journal of Composite Materials, Journal of Cultural Heritage, Journal of Engineering and Technology, Journal of Food Engineering, Journal of Materials Engineering and Performance, Journal of Materials Science, Journal of Nanomaterials, Journal of Nanoscience and Nanotechnology, Journal of Natural Fibers, Journal of Nondestructive Evaluation, Journal of Pharmacognosy and Phytotherapy, Journal of Polymers and the Environment, Journal of Reinforced Plastics, Journal of Sandwich Structures and Materials, Journal of Testing and Evaluation, Journal of the Brazilian Society of Mechanical Sciences and Engineering, Malaysian Polymer Journal, Material Science and Engineering A, Materials and Design, Materials and Manufacturing Processes, Materials Chemistry and Physics, Materials and Structures, Measurement, Mechanica, Mechanics of Advanced Materials and Structures, Metals, Multidiscipline Modeling in Materials and Structures (MMMS), Particulate Science and Technology, Polymer Degradation and Stability, Polymers, Polymeros, Sensors, Structural Health Monitoring, Tribology International, Walailak Journal of Science and Technology, Waste Management, Wood Science and Technology

SUPERVISION OF PROJECTS

Year	Project	University	Title
2016-19	PhD	Camerino	Cellulose nanocrystals (NCC) from cotton waste and mucilage
			and fibers from opuntia ficus indica (OFI): extraction and

			application in paper and thermoplastic starch films
2018-19	BSc	Camerino	Design of a house-based gym exercising system
			Anti-terrorism barriers as urban design
			Design of a "matrioska" inspired furniture
			Designing of an adaptable kitchen peninsula
			Easy-to-clean cat litter disposal system
2017-18	BSc	Camerino	Oil pomace waste and ceramic pouring pots for oil branding
			Compostable pot for home gardening made in egg shell
			composite
			Texturised lawn support in leather waste-based composite
			Cycle modular track in oil-pomace obtained material
			Re-heatable table electric mini-cloth for children and disabled
			Lampshade in hemp paper decorated sheets
			Home customisable papel in hemp paper decorated sheets
			Diatomaceous stone ton foldable table
			Trekking materials from cardboard and other waste
			Coffee waste-derived lampshades
			Portable outdoor ceramic BBO
			Worm composting system for backvards
			Fasy to assemble net-house in cardboard/lacron
			Camping tent in cardboard
			Biodegradable clothing labels
			Ergonomic re-design of electric guitar
			Design set for advertising lschip green tuff materials
			Bamboo tea service in Chinese style
			Softair hiodegradable materials in hemp hioplastics
			Fridge containers in PLA with coffee and orange waste
2016 17	PSc	Camorino	DMMA floor loop with adjustable light
2010-17	DSC	Camerino	Coffee waste based bioplastics sups
			Cork waste-based kitchen objects
			Lamps from DET re-used heer containers
			Banana neels filters for developing countries
			Labels for branding in sustainable apple waste-based materials
			DIV material tinkering as a didactical method for designers
			Disassemblable trolley hag
			3D large format printer production of scalable room lamp
			Sandal made from waste from prickly pear cactus cladodes
			Panels for workspace in woodchins based bioplastic
			Recreational kit for presentation of hio-based materials to
			nrimary school children
			Development of bags from HDPE reused nets and eco-leather
			waste
			Mobile station portable system for commuters
			Bioplastic universal wheel covers
			Cardboard tronby cups
			Panier-maché/wood lamp
			Proposal for new materials for a smartphone body
2015-16	BSc	Camerino	Gadgets for Porto San Giorgio in mussel-based materials
			Plav-like furniture for children
			Nettle textiles
			Residential system for energy accumulation
			Banana peel waste-based material for bijoux
2014-15	BSc	Camerino	Luffa based lamp
			Bicycle from upcycling of anti-fire sleeves
			Sustainability of wood-derived products
			Rucksack-dress in reused materials
			Design of a desk with innovative materials
			Mountable and foldable seat in hemp
			Doors and contour frames

			Adaptable ceiling light
			Patchwork dress
			Adaptable and rechargeable mini-car
			Emergency lights using OLED
			Wood/Corian for bathroom furniture
			Multifunctional rechargeable standard lamp
			Seat in hemp bioplastics
			Rechargeable indoor/outdoor table
			Re-design of automotive seat
			Catering set in bioplastics from potato skins
			Smart rechargeable trolley
			"Green" floor tile in bioplastics with pulp and eggshells
			Self-production of wooden spectacle frames
			Auxetic shape memory lamp
			Multifunctional standard lamp & table
			Tetrahedron shaped architectural jewels
			Hemp wearable bags
			Biocomposites for interiors from oil pomace waste
			Bioplastics from milk waste for catering objects
			Zeolite-powered lunchbox
			Perpetual motion system for auxiliary garden lighting
			Development of a modular table for outdoor use
			Study on the improvement of a drink mixer
			Construction of a tricycle with cardboard frame
2013-14	BSc	Camerino	Multibrand showroom for Marche region

CO-SUPERVISION OF PROJECTS

Year	Project	University	Title
2018-19	BSc	Camerino	Characterisation of hemp and flax historical canvases from
			painting (XVII-XVIII century)
2015-16	BSc	Camerino	Toy-like lamp with travertine "lace-like" use
2015-16	BSc	Sapienza	Bioplastics from cocoa waste and silicone: textural study
2015-16	BSc	Politecnico di Torino	Bioplastics from vineyard waste (grape skins, etc.)
2014-15	BSc	SUN	Introducing primary school pupils to biomimetics: a case study
2014-15	MSc	SUN	Auxetic developments of bio-inspired materials
2014-15	MSc	Camerino	Compact and foldable silicone system for cooking
2014-15	BSc	Camerino	Modular systems for flexible living
			Lamps with steel spirals and Gravina tuff
			Nomadic life bag and garment
			Sound absorbing panels in sopravvissana wool
			Clothing pleated with different geometries
			Luggage-wardrobe system
			Fair stand folding system
			Multifunctional storage system for nomadic life
			Design of educational games for children
			Use in fashion of hemp and wheat straw
2013-14	BSc	Camerino	Modular system for cooking
			Ethical compact and transportable kitchen
			Beauty farm/Spa (2 projects)
			Materials for shoes with sustainable end-of-life
2013-14	MSc	Politecnico Milano	Products from recovery of cocoa industry waste
2012-13	PhD	Poitiers-ENSMA	Fatigue and impact properties of hemp-epoxy composites
2012-13	MSc	Sapienza	Mechanical, thermal and electrical characterization of polymer
			joints for cable dielectrics
2012-13	BSc	SUN	Expression of sound identity
2012-13	BSc	SUN	Self-produced bioplastics for design application
2012-13	BSc	SUN	Auxetic structures for design
2011-12	BSc	SUN	Development of composite in ash wood/flax fibres

2011-12	PhD	Anna University	Defect characterization and failure load prediction of composite
		(India)	laminates using acoustic emission monitoring
2011-12	BEng	Sapienza	Development of hybrid composite materials using wool felt and inte cloth
2010-11	BSc	SUN	Use of unrecyclable materials in design products
2010 11	200	5011	(4 projects: wine production waste wood waste Corian and
			plastic crockery)
2009-10	BSc	SUN	Use of auxetic materials in seat design
2009-10	BSc	SUN	Development of ceramics from lava waste materials
2009-10	BSc	SUN	Bio-inspired canvas structure in hemp concrete
2009-10	BSc	Sapienza	Use of natural fibre in boat hulls production
2009-10	BSc	SUN	Lighting systems inspired to diatoms
2009-10	BSc	SUN	Bio-inspiration from fish on wind turbines
2009-10	BSc	SUN	Products in lava-derived ceramics
2009-10	MEng	Sapienza	Sustainable composites and panels using phormium fibres
2009-10	BSc	SUN	Jewel design from materials of marine origin
2009-10	BSc	SUN	Bio-inspired projects on a sustainable use of water
2009-10	BSc	SUN	Photo-luminescent disappearing wall
2009-10	BSc	SUN	Bio-inspired system as a support for fungal growth
2008-09	BSc	Sapienza	Acoustic emission study of the behaviour of nickel – lantanium
			solid solutions for hydrogen storage
2008-09	BSc	SUN	Objects for transport applications inspired to diatoms
2008-09	BSc	SUN	Objects for energy generation inspired to diatoms
2008-09	BSc	SUN	Bio-inspired lunchbox
2008-09	BSc	SUN	Strategies and parasitic design for energetic autonomy
2008-09	BSc	SUN	Biomimetic junctions inspired to diatoms
2008-09	BSc	SUN	Bio-inspired jewels with shape memory alloys
2007-08	MEng	Sapienza	Phormium fibre reinforced composites
2007-08	BSc	SUN	Multifunctional tool for child disability
2007-08	BSc	SUN	Products and services for international co-operation
2006-07	BSc	SUN	Development of bio-inspired furniture concepts
2002-03	Erasmus	Reading Uni.	Impact performance of decorticated flax fibre composites and
			flax/E-glass fibre hybrids
2000-01	BSc	Nottingham Uni.	Compression moulding and mechanical performance of
			GMT/Twintex hybrids
2000-01	BSc	Nottingham Uni.	Analysis of impact damage on thermoplastic composites using
			thermal imaging
1999-00	Erasmus	Nottingham Uni.	Moulding optimisation of commingled E-glass polypropylene
			composites
1999-00	Erasmus	Nottingham Uni.	Relation between internal void content and impact energy
			absorption in commingled thermoplastic composites
1995-96	MEng	Politecnico Milano	Polymerisation control on Al/Al joints by acoustic emission

CONSULTANCY ON RESEARCH PROJECTS

Year	Project	University	Subject
2013-14	BSc	Camerino	Materials for modular home
2012-13	MEng	Perugia	Nanocomposites with nanocellulose from natural fibres
2010-11	MEng	Sapienza	Hydrolysis process for poly(lactic acid) decomposition
2008-09	BSc	SUN	Autonomous watering system for domestic plants
2007-08	BSc	SUN	Lunch box for organic food with designed temporal cycles
1996-97	MEng	Sapienza	Single fibre fragmentation tests monitored by acoustic emission
1993-94	PhD	Sapienza	Mechanical performance of metal matrix composites produced by
			squeeze casting
1992-93	MEng	Sapienza	Acoustic emission monitoring of tensile tests on Al/Al ₂ O ₃ composites
1992-93	MEng	Sapienza	Acoustic emission and Weibull distribution of mechanical results
			during flexural tests on zirconia partially stabilised with yttria
1991-92	MEng	Sapienza	Post-impact damage monitoring on Kevlar/epoxy stitched composites

	by acoustic emission and image analysis

OTHER TEACHING

Tutoring for stages of secondary schools in the University (ITT "Allevi"- Terni; IIS "Fermi" – Ascoli, Liceo Scientifico "Donatelli", Terni)

Lecturing at courses for IFTS (upgrade of technical knowledge) on renewable materials and processes for the Marche Region, year 2015-16 (32 hours), year 2017-18 (12 hours) and year 2019-20 (30 hours) on themes ranging from wood, paper and bioplastics.

I was also lecturer in Italian technical high school (Age 15-18), as detailed below:

Year	Taught subject	School
2018-19	Maths.in English (IGCSE: 10 hours)	Liceo G.C. Tacito – Terni
1997-98	Mathematics	IPSIA-Busto & IPSIA- Gallarate
1993-94	Applied mechanics	ITIS "Marconi" Civitavecchia
1993-94	Thermal machines	IPSIA "Calamatta" Civitavecchia
1992-93	Mechanical technology	IPSIA "Minniti"-Guidonia
1992-93	Chemistry	IPSIA "Parodi Delfino" – Colleferro
1991-92	Industrial chemistry and chemical plants	IPSIA "Minniti"-Guidonia
1988-89	Mathematics and physics	Liceo Linguistico Paolo VI- Roma

Since **1982** private tutor of maths, physics, chemistry, Latin, French and English (~ 6000 hours total). Also, activity as a technical translator, mainly from English to Italian, and proofreader of English and Italian texts. Translation in French of the book "Cucinare alla siciliana" by Carmelo Sammarco (1999).

DEMONSTRATING

Year	University	Subjects
2005-06	Reading	Vibration projects
2004-05	Reading	Vibration projects
2002-03	Reading	Impact testing on composites
2000-01	Nottingham	Composites moulding, void content measurements, impact testing and IR
		thermography
1999-00	Nottingham	Composites moulding, void content measurements, impact testing and IR
		thermography
1998-99	Liverpool	Thermoelastic techniques
1997-98	Roma – Sapienza	Acoustic emission and IR thermography
1992-93	Roma – Sapienza	Acoustic emission testing
1991-92	Roma – Sapienza	Acoustic emission testing
1990-91	Roma – Sapienza	Acoustic emission testing

PRESENTATIONS (seminars and conferences)

Member of the organising committee, invited speaker and chairman at 10th Colloque Cercle Etudes des Métaux (Saint Etienne 16-17 November 1995), 5th Course on "Smart Materials and Nanotechnologies" (Jesi, 26-29 August 2003), 6th Course on "Biomaterials, Tissue Engineering and Biomimetics" (Jesi, 31 August-3 September 2004), 2nd (Rome April 2009), 3rd (Rome October 2011), 4th (Rome October 2013) and 5th (Rome October 2015) Conference on Natural Fibre Composites (also co-editor of the proceedings).

Member of the organising committee EvoEnvironment 2009 (Tubingen April 2009) and Design in Mostra (Napoli June 2007, June 2009 and June 2010).

INVITED SEMINARS

Month	Venue	Title
4-2020	Università dell'Aquila	Coatings for thermal insulation and to reduce energy waste
2-2020	Ascoli (Liceo Scientifico)	A no plastic world? Is plastic necessary?
11-2019	Camerino (Science Museum)	DIY materials from agrofood waste
11-2019	Terni (Scuola Casagrande)	Waste reducing strategy & Planned obsolescence

10-2019	Belforte Del Chienti (library)	Biomimetics, lesson from nature
10-2019	Camerano (IKEA)	DIY materials from waste tinkering
7-2019	Amandola (Town Council)	Material tinkering for circular economy
6-2019	Genova (Faculty of Architecture)	Tinkering with food waste
6-2019	Dunarobba (Fortezza Alta)	Strategies for packaging reduction
5-2019	Civitanova (IIS Da Vinci)	Self-production of materials from waste
5-2019	Terni (twice) & Ascoli	Biomimetics lesson from nature
3-2019	Bovereto (Circolo del suolo)	Self-production and inspiration from nature for sustainability
2-2019	Rovereto (Green week)	Potential of high implication the redevelopment of silk production
2-2019	Fermo (Liceo Artistico)	DIV materials from waste tinkering
1-2019	Aquila (Academy of Arts)	Natural fibre composites in engineering
12_2013	Magliano Sabina	DIV materials tinkering for children
12-2018	Torni (Vittorio Vonoto)	DIV materials tinkering for children
11 2010	Roma (Sanjonza)	DIV materials tinkering for use in design
11-2010	Torpi (Scuola Edila)	Home in circular oconomy
11-2018	Tehriana	
10-2018		
9-2018	ASSISI	Hemp in circular economy
9-2018	Camerino (University)	Projects on production of DIY materials from waste
9-2018	Ierni (Canapa in Umbria)	Hemp in circular economy
6-2018	Anzio (Colgate Palmolive)	Biopolymers for packaging
3-2018/ 5-	Corridonia, Belforte sul Chienti,	DIY materials from differentiated waste
2018	Camporotondo, Caldarola	
2-2018	IPSIA Terni	DIY bioplastics from waste
12-2017	Ancona (Ecoforum)	DIY bioplastics from waste
12-2017	Venezia (IUAV)	Bio-inspired design
10-2017	Montefranco primary school	Biomimetics for children
7-2017	Roma (Explora)	DIY bioplastics production: a lab experience (children 8-11 y.o.)
7-2017	Ancona (University)	Bioplastics from hemp
6-2017	Magliano Sabina primary school	DIY materials from differentiated waste
3-2017	Montefranco primary school	Differentiated waste collection for children
2-2017	Naples (4th Unconference)	Waste, bioplastics, mixing up: method and personality
2-2017	Pomezia (Primary school)	Differentiated waste collection for children
1-2017	Civitanova Marche (Ecotiles)	Use of agrowaste for the production of bioplastics and
		biocomposites
12-2016	Università dell'Aguila	Natural fibres in engineering
11-2016	Riabita Fermo	Natural materials for construction
10-2016	IIS Ascoli	Natural fibres and DIY bioplastics
10-2016	Politecnico di Milano	Bio-inspiration in design
	(2 seminars)	DIY bioplastics
5-2016	Eirenze (Lorenzo de' Medici	Biomimetics and bio-inspiration
5 2010		
	design school)	
4-2016	design school) Sant'Anatolia (Museo della	DIV materials from waste
4-2016	design school) Sant'Anatolia (Museo della Canana)	DIY materials from waste
4-2016	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani)	DIY materials from waste
4-2016	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children
4-2016 4-2016 2-2016	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children
4-2016 4-2016 2-2016	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children
4-2016 4-2016 2-2016 1-2016	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children
4-2016 4-2016 2-2016 1-2016 1-2016	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics
4-2016 4-2016 2-2016 1-2016 11-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications
4-2016 4-2016 2-2016 1-2016 1-2016 11-2015 10-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites
4-2016 4-2016 2-2016 1-2016 1-2016 11-2015 10-2015 4-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability
4-2016 4-2016 2-2016 1-2016 1-2016 11-2015 10-2015 4-2015 3-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT) Aversa (SUN)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability Hierarchisation and the engineering of natural materials
4-2016 4-2016 2-2016 1-2016 1-2015 10-2015 4-2015 3-2015 2-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT) Aversa (SUN) Johor Bahru (UTM) (2 seminars)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability Hierarchisation and the engineering of natural materials Plant fibre composites and agro-waste nanocomposites
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4-2016 4-2016 2-2016 1-2016 11-2015 10-2015 4-2015 3-2015 2-2015 2-2015 2-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT) Aversa (SUN) Johor Bahru (UTM) (2 seminars) San Liberato (Primary school) Alleppey (Kerala-India)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability Hierarchisation and the engineering of natural materials Plant fibre composites and agro-waste nanocomposites Biomimetics for children Challenges and opportunities for plant fibre composites
4-2016 4-2016 2-2016 1-2016 1-2015 10-2015 4-2015 3-2015 2-2015 2-2015 2-2015 1-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT) Aversa (SUN) Johor Bahru (UTM) (2 seminars) San Liberato (Primary school) Alleppey (Kerala-India) Terni (BCT)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability Hierarchisation and the engineering of natural materials Plant fibre composites and agro-waste nanocomposites Biomimetics for children Challenges and opportunities for plant fibre composites Differentiated waste collection for children (and adults): an
4-2016 4-2016 2-2016 1-2016 1-2015 10-2015 4-2015 3-2015 2-2015 2-2015 2-2015 1-2015	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT) Aversa (SUN) Johor Bahru (UTM) (2 seminars) San Liberato (Primary school) Alleppey (Kerala-India) Terni (BCT)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability Hierarchisation and the engineering of natural materials Plant fibre composites and agro-waste nanocomposites Biomimetics for children Challenges and opportunities for plant fibre composites Differentiated waste collection for children (and adults): an experience
4-2016 4-2016 2-2016 1-2016 1-2015 10-2015 4-2015 3-2015 2-2015 2-2015 2-2015 1-2015 5-2014	design school) Sant'Anatolia (Museo della Canapa) Fermo (ITIS Montani) Arrone/Montefranco/Ferentillo (Primary schools) Pomezia (Primary school) Aversa (SUN) Camerino (Maths-UNICAM) Forlì (UNIBO) (2 seminars) Terni (BCT) Aversa (SUN) Johor Bahru (UTM) (2 seminars) San Liberato (Primary school) Alleppey (Kerala-India) Terni (BCT) Aquila (School of Restoration)	DIY materials from waste Biopolymers and composites for sustainability Differentiated waste collection and biomimetics for children Differentiated waste collection for children DIY materials: bioplastics Lignocellulosic fibre composites applications Lignocellulosic fibre composites Design objects and sustainability Hierarchisation and the engineering of natural materials Plant fibre composites and agro-waste nanocomposites Biomimetics for children Challenges and opportunities for plant fibre composites Differentiated waste collection for children (and adults): an experience Hemp and other plant fibres

12-2013	Université de Poitiers	Plant fibre composites and other research interests
12-2013	Sealed Air (Rho)	Biomimetic packaging
11-2013	Università di Camerino (Ascoli)	Bio-inspiration as respectful knowledge of natural materials and
		structure personality
11-2013	Napoli (Museo della Scienza)	Bio-inspired strategies for 3R+
11-2013	Terni (BCT)	Hemp comeback
9-2013	Roma (Explora- Museo dei	Lotus effect and gecko adhesion for children
	Bambini)	
9-2013	Rivalta Scrivia (Proplast)	Natural fibres and interface issues with polymer matrices
6-2013	Aversa (SUN)	Biomimetics and self-production of materials
6-2013	Terni (BCT)	Biomimetics: natural inspiration
5-2013	Roma – La Sapienza	Biodegradability and compostability: plastics and environment
4-2013	Aversa (SUN)	Resources from waste and the role of design
4-2013	Terni (BCT)	Waste from problem to resource
3-2013	Terni (Centro Guglielmi)	Sustainability and differentiated waste collection
1-2013	Prato (Camera di Commercio)	Sustainable innovative and bio-inspired materials
1-2013	Terni (BCT)	The consumer between eco-packaging and zero-packaging
11-2012	Terni (BCT)	Nature and the use of waste for children (Trinlaerre, la natura e gli
11 2012		scarti)
11-2012	Terni (BCT)	Renair is convenient
11-2012	Roma – La Sapienza	New materials based on nanocellulose extracted from plants
10-2012	Università di Camerino (Ascoli)	Biomimetics: lessons from nature
7-2012	Napoli (Biomimetics workshop)	Diatoms: an engineering perspective
/ 2012	(2 lectures)	Biomimetic formation and hio-inspiration
4-2012	Università di Camerino (Ascoli)	Bio-inspiration for sustainability from materials' culture
11-2012	Università dell'Aquila	Cellulosic fibres for structural composites
10-2011	Sant'Anatolia	Image and technical use of natural fibres
5-2011	Università di Perugia (Terni)	Plant fibre composites for impact-resistant applications
5-2011 From 5	Torni (various schools) Narni	Differentiated waste collection for children (Triplaerre e i colori)
2011	Guardoa Orvieto Acquasparta	
2011	Danigno	
3-2011	Nanoli (Città della Scienza)	Natural strategies and hio-inspiration
3-2011	Carsulae (Terni)	International Vear of Forests and the fourth "P": repair
5-2011		(Triplaerre batte quattro)
3-2011	Terni (Centro Guglielmi)	Recycle and other R
2-2011	Terni (Centro Guglielmi)	Assembly/disassembly
2-2011	Terni (Centro Guglielmi)	Global production/local effect
1-2011	Terni (Centro Guglielmi)	Environmental and social sustainability
12-2011		Eibreglass degradation for presence of water or LIV irradiation
6-2010	Nanoli (Mostra d'Oltremare)	Biomimetic use and image of natural fibres and products
5-2010	Mestre (Centro Civico)	Natural fibres and sustainable materials
3-2010	Università dell'Aquila	Application of ligno-cellulosic fibres for manufacturing sustainable
5 2010		composites
2-2010	Terni (primary schools)	Biodiversity and biopolymers for children
2 2010		(Trinlaerre, nolymers and nature)
2 2010	Torpi (CATP)	Natural fibras for sustainable structures and materials
2-2010	(2 cominans)	Natural libres for sustainable structures and materials
2 2010	(2 seminars)	Bio-inspired design of materials and schuctures
2-2010		humans conv from nature
7-2009	Università di Bologna	Falling weight impact hysteresis curves from natural fibre
/-2003		composites
6-2009	Portsmouth Uni	Activities on natural fibre composites
From	Terni (primary schools)	Natural fibres for children
2-2009	Venezia (primary schools)	
2-2005	Marcianise (SUN)	ICA plant fibres and natural design
12_2000	Senigallia	"Da D'Annunzio a Dirandello" hy Mario Duccini
6-2007	Nanoli (Advanced Decign)	Indications from natural design
6-2007	Roma - La Sanienza	Laser vibrometry for non-destructive testing of materials
5-2007	Roma - La Sapienza	Materials for superconductive applications
J-2007	noma - La Sapienza	

3-2007	Roma - La Sapienza	Materials for superconductivity
2-2007	Marcianise (SUN)	Plant fibres for sustainable materials
2-2007	Liverpool Uni.	Selecting plant fibres for the reinforcement of impact-resistant
		composites
2-2006	Birmingham NEC (IPOT 06)	Laser vibrometry study of airflow sensors in crickets
11-2005	Marcianise (SUN)	Biomimetic materials design
8-2004	Jesi (Materials Science summer	Insect nanosensors as smart biomaterials
	school) (2 lectures)	Middle ear Laser Doppler vibrometry
2-2004	Birmingham	Laser vibrometry non-destructive testing of vegetal tissue
	(Laser vibrometry workshop)	
1-2004	Reading Uni.	Laser vibrometry non-destructive testing of vegetal tissue
9-2003	Worcester (BINDT)	Vibration tests for non-destructive control in apples and avocados
8-2003	Jesi (Materials Science summer	Smart materials from nature: a biomimetic approach
	school)	Smart gel actuators
	(3 lectures)	Microstructure and properties of natural fibre composites
4-2003	Reading Uni.	Impact properties of flax-epoxy laminates
3-2003	Reading Uni.	Coupling of gel and braided structures for smart actuators
		development
2-2003	Reading Uni.	Development of smart actuators from gel-in-braid structures
1-2003	Dante Alighieri Nottingham	Pius IX and the railways in Rome (1846-1870)
1-2002	OU – Milton Keynes	Natural fibre reinforced composites: state of the art
9-2001	NNC – Knutsford	Thermoelastic stress analysis for impact damage assessment on
		jute fibre reinforced laminates
2-2001	Nottingham Uni.	Some proposals to set a check-list for an Environmentally Friendly
		Christian
9-2000	Rutherford Appleton Lab. –	Thermoelastic investigation on impact damaged woven GRP
	Didcot	composites
9-1999	Sheffield Uni.	Thermoelastic stress measurements on impacted glass
		mat/polyester woven composites
5-1999	Liverpool Uni.	Impact damage evaluation in glass and jute fibre woven
		composites using acoustic and thermoelastic techniques
2-1996	K II Leuven	Impact damage evaluation on keylar/enoxy stitched composites
2 1550		using image analysis and acoustic emission monitoring during
		compression after impact (CAI) tests
11-1995	Università di Trento	Unrecoverable crack propagation on ceramic materials during
		bending tests observed by acoustic emission monitoring
		compared with fractography

CONFERENCE PRESENTATIONS

Month	Venue	Title
5-2020	Barcelona (Food Creative Cycles)	Coffee waste: a material science view
7-2019	Porto (ICNF2019)	Bioplastics from hemp shives and waste clay
5-2019	Pordenone (proESOF Conf.)	Materials tinkering with waste
12-2017	Genova (University, School of	Biomimetics: materials, future and research
	Architecture)	,
12-2017	Camerino (Coffeehub conf.)	DIY bioplastics from ground coffee waste
5-2017	La Rochelle (ISGC2017)	PLA/mussel shells fragments composites for design use
9-2016	Poitiers (Conf. on dynamic	Fatigue properties of vegetable fibre composites: a review
	properties on natural fibre	
	composites)	
10-2015	Rome (Sapienza: 5th Natural	PCL-luffa fibre composites
	Fibres Conf.) (2 papers)	Basalt/flax vinylester hybrid composites
7-2015	Copenhagen (ICCM20)	Impact and post-impact properties of carbon/flax hybrid
		composites
10-2013	Rome (Sapienza: 4th Natural	Falling weight impact of plant fibre composites
	Fibres Conf.) (2 papers)	Post-impact fatigue of hemp/epoxy composites
6-2012	Venezia (ECCM15)	Impact properties of different plant/basalt fibre hybrid laminates
6-2012	Torino (Nanomaterials and	Mechanical and impact properties on jute/wool felts hybrid
	Composite Conf.)	composites
10-2011	Roma (Sapienza; 3rd Natural	Acoustic emission analysis of hemp/aluminium fibre metal
	Fibres Conf.)	laminates
10-2011	Firenze (Conf. AIPnD)	Non-destructive characterisation of impact-damaged natural fibre
		composites
10-2009	Rome (Italian NDT Conference)	Indentation of hemp/PP laminates by acoustic emission
		Fractal profile of impact-damaged areas in woven GRP
4-2009	Rome (Natural Fibres	Effect of fibre architecture on impact properties of hemp/epoxy
	Conference)	composites
	(2 papers)	Lady's fingers fibres for composites
11-2008	Inverness (SDRC)	Biomimetic design for local issues
9-2008	Krakow (EWGAE)	Acoustic emission monitoring of plant fibre composites)
6-2008	Stockholm (ECCM13)	Characterization of indentation damage on carbon/epoxy
		laminates by means of acoustic emission
10-2007	Roma (Natural Fibres	Impact damage characterisation in flax/epoxy laminates
	Conference) (2 papers)	Celery fibre/epoxy composites
10-2007	Milano (Italian NDT Conf.)	Detection of buried objects by IR thermography
7-2007	Brunel University (ICEM8	E-glass/jute hybrid composites and their linearity of behaviour
	Conference)	
9-2006	Stratford on Avon (BINDT)	Void measurement on balsawood using IR thermography
6-2006	Ancona (AIVELA Conf.)	Laser vibrometry study of airflow sensors in crickets
12-2005	London (ASAB Meeting)	Vibration of filiform hairs in house crickets (Acheta Domesticus) in
		response to induced airflow
10-2005	Milano (Italian NDT Conf.)	Vibration damage assessment on fruits
9-2004	Torquay (BINDT)	Vibration damage assessment on fruits
4-2003	Ravenna	Evaluation using IR thermography of post-impact damage in
	(Italian NDT Conf.)	composites and automotive components
12-2002	Albuquerque	Development of smart actuators using <i>n</i> -isopropylacrylamide gels
0.0000	(1 st Biomimetic Conference)	
9-2002	Reading Uni.	iv-isopropylacrylamide gels for the creation of smart actuators
2 2002	(BIOMIMETICS /)	Void content measurements in the measure the second state of the s
3-2002		void content measurements in thermoplastic composite materials
6 2001	(4 IVICIVI conterence)	trirougn image analysis from optical micrographs
0-2001		Relation between moulding conditions and mechanical and
	(EURUIVIAI CONT.)	impact properties in commingled E-glass/polypropylene
12,2000	Ford Auto Duntor	composites
12-2000		impact properties of thermoplastic laminates for automotive
	(ACP 2000 conterence)	applications

10-2000	Rome EUR	Characterisation of the damage area in glass fibre reinforced
	(World NDT Conf.)	composites using AE planar localisation
5-1998	Vienna	A study of the reliability of neural network approach to manage
	(European AE conf.)	acousto-ultrasonics results on bonded joints.
	(2 papers)	Thermal damage analysis by combined thermographic inspection
		and AE localisation on honeycomb panels
9-1997	Padova	Acoustic emission during post-impact tensile tests of woven
	(Italian NDT conf.)	composite laminates
9-1997	Nevers	Reliability of glass fibre-epoxy adhesive joints under repeated
	(EUROMECH 358)	loading cycles through acoustic emission and acousto-ultrasonic
		technique
11-1996	Saint Etienne	Thermal fatigue on ceramic coated cutting tips by acoustic
	(Colloque CEM)	emission
6-1996	Università di Parma	Effect of transverse fatigue loading on the stiffness reduction of
	(IGF conference)	carbon reinforced composites
11-1995	Saint Etienne	Correlation between fracture mechanics and acoustic emission
	(Colloque CEM)	detected during bending tests on ceramic materials by means of
		statistical methods
10-1995	Torino – Lingotto	Structural significance of AE events distribution during tensile
	(Italian NDT conf.)	tests monitoring on composites
7-1995	Sundsvall	AE monitoring during cure cycle of metal/metal (2024 T3 alloy)
	(AECM5 conference)	adhesive joint for quality assessment
7-1995	Università di Brescia	Damage evaluation on metal matrix composites by acoustic
	(IGF conference)	emission monitoring
11-1994	CISE-Segrate	Evaluation of the resistance of composite structures by acoustic
	(AE workshop)	emission
6-1994	Politecnico di Torino	Bending mode fracture study with acoustic emission on yttria
	(IGF conference)	partially stabilised zirconia
	(2 papers)	Analysis of scattering from a theoretical model in fracture mode
		of MMCs

PUBLICATIONS

Books

Santulli C, A thermoacoustic study of post-impact behaviour in composites, VDM Verlag, 216 pp., 2010, ISBN 9783639223743.

Santulli C, Milani L, Biomimetica: la lezione della natura, CiEsse Edizioni, 2012, 128 pp., ISBN 978-88-6660-026-8 (translated also in English and in Spanish).

Journal papers

2020

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Terni, 3 giugno 2020

Carlo Santulli

Osilo Antilly