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CURRICULUM VITAE OF ROBERTO MONTANINI (ENG)

EDUCATION AND ACADEMIC POSITIONS

- ❖ Professor (with tenure) of Mechanical and Thermal Measurements, University of Messina, Italy.
- ❖ Ph.D., Polytechnic of Turin, Italy.
- ❖ Post-graduate degree in Mechanical Engineering, University of Rome "La Sapienza", Italy.

MEMBERSHIP IN SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

- Member of the Italian Group of Mechanical and Thermal Measurements (GMMT).
- Member of the Italian Association for Non-Destructive Testing, Monitoring and Diagnostic (AiPnD). AiPnD has promoted the foundation of the European Federation for Non-Destructive Testing (EFNDT) and is permanent member of the International Committee for Non-Destructive Testing (ICNDT).
- Member of the IEEE Instrumentation and Measurements Society (IMS).
- Member (local contact point) of the "Coordinamento della Meccanica Italiana", a National organization, funded in 2008, which is aimed to contribute to the advance of the technical and scientific knowledge in the field of Mechanical Engineering.
- Member of the Italian College of Engineers.

EXECUTIVE POSITIONS

- Director of the MMT (Mechanical and Thermal Measurements) Lab of the School of Engineering of the University of Messina, Italy (from 2004).
- Member of the Ethical Committee of European Organization for Certification (OEC) (from 2012).
- Member of the Executive Board of the Interdepartmental Centre for Research on Quality (CE.RI.QUA.), University of Messina, Italy (from 2004).
- Member (by election) of the Academic Senate of the University of Messina (from 2013).
- Member of the Research, innovation and Technological Transfer Committee of the University of Messina (from 2013).

DIRECTION OF POSTGRADUATE MASTER COURSES

- Director of the Master program in "Smart Grids for Territorial Efficiency and Sustainability" (R.E.S.E.T.), 2014-15, the University of Messina (Italy) in 2011/12 and co-financed by the European Union (EU). EU funding: 84 k€
- Director of the Master program in "Technologies for Renewable Energies and Energy Saving (T.E.R.R.E.)", promoted by the University of Messina (Italy) in 2011/12 and co-financed by the European Union (EU) under the project PO FSE Obiettivo Convergenza 2007-2013 - Asse IV). EU funding: 178 k€.
- Coordinator of the Interfaculty Master program in "Systems for hydrogen production and fuel cells powered electric vehicles", promoted by the University of Messina (Italy) in 2007/08 and co-financed by the European Union (EU) under the project POR Sicilia 2000/06, Misura 3.07 az. C, Asse III). EU funding: 282 k€.

SERVICE IN ACADEMIC COMMITTEES

- Member of the Scientific Board of the Ph.D School in “Engineering and Chemistry of Materials” at the University of Messina, Italy (from 2002).
- Member (by election) of the Scientific Committee for the evaluation of research proposals in the field of Industrial and Information Engineering (Area 09) for the years 2003 and 2004, University of Messina, Italy.
- Secretary of the Study Program in Naval Engineering at the University of Messina, Italy (2003-2006).
- Member (by election) of the Board of the Department of Industrial Chemistry and Materials Engineering of the University of Messina, Italy (2007-2010).
- Dean’s Deputy for Job-placement, Faculty of Engineering, University of Messina, Italy (2008-2012).
- Member (by election) of the Scientific Committee for the evaluation of research proposals in the field of Industrial and Information Engineering (Area 09) for the years 2008, 2009 and 2010, University of Messina, Italy.
- Member of the Steering Committee of the postgraduate Master's Degree in "Systems for hydrogen production and fuel cells-powered electric vehicles", promoted by the University of Messina, Italy (2007-2008).
- Member of the Selection Committee for admission to the Ph.D. program in "Engineering and Chemistry of Materials", University of Messina, Italy (2003, 2006 and 2009).
- Member of the Doctoral Dissertation Supervisory Committee for the Ph.D. program in “Engineering and Chemistry of Materials”, University of Messina, Italy (2006).
- Member of the Master’s Thesis Supervisory Committee for the Master’s degree in “Systems for hydrogen production and fuel cells-powered electric vehicles”, University of Messina, Italy (2008).
- Member of the Evaluation Committee for post-doc research grants in the field of Industrial and Information Engineering (Area 09), University of Messina, Italy (2009).
- Secretary of the Study Program in Industrial Engineering at the University of Messina, Italy (from 2011).
- Member of the Student Admission Committee of the Interuniversity Consortium of Integrated Systems for University Access (C.I.S.I.A.) (2011).
- Member of the Steering Committee of the postgraduate Master's Degree in "Technologies for Renewable Energies and Energy Saving (T.E.R.R.E.)", promoted by the University of Messina, Italy (2011-2012).
- Member of the Selection Committee for admission to the postgraduate program in “Energy Certification of Buildings”, promoted by the University of Messina, Italy (2012).
- Responsible for the calibration service of mechanical and temperature transducers as part of a scientific agreement between the Department of Engineering and the company Sidercem Srl, aimed to outlining common protocols for the certification of laboratory equipment, developing research activities in the field of mechanical and thermal measurements and laying the basis for spin-off initiatives in the field of metrology (from 2004).

EXTRA-MURAL RESEARCH FUNDING

2015-2016 (Partecipant)

Project title: Research and Mobility

Project leader: Università degli Studi di Messina

Partners: University of California San Diego, University of California Berkeley, Polytechnic of Hong Kong, Massachusetts Institute of Technology (MIT), Duke University, École polytechnique fédérale de Lausanne (EPFL).

Budget: 77 k€

2012 – 2015 (Partecipant)

PON Ricerca e Competitività 2007-2013

Project title: TESEO - Efficient technologies for energy and environmental sustainability on-board

Duration: 36 months

Project leader: NAVTEC District - Research Consortium for Technological Innovation

Partners: Fincantieri Cantieri Navali Italiani Spa, RPS Consulting Spa, Consorzio per la ricerca e sviluppo del trasporto marittimo, Università degli Studi di Messina, Università degli Studi di Catania, Università degli Studi di Palermo, Consiglio Nazionale delle Ricerche, Tringali Srl
Budget: 989 k€

2012 – 2015 (Participant)

PO FESR Sicilia 2007-2013

Project title: INTEP – Technological and Process Innovation for Manufacturing

Duration: 36 months

Project leader: Università degli Studi di Messina

Partners: Università degli Studi di Catania, Università degli Studi di Palermo, Consiglio Nazionale delle Ricerche, Consorzio per l'Area di ricerca scientifica e tecnologica di Trieste

Budget: 4.565 k€

2011 - 2012 (Principal investigator)

Research Project of National Interest (PRIN 2008)

Project title: "Development and characterization of new devices for measurement of ethanol concentration in human breath using smart sensors"

Duration: 24 months

Budget: 36 k€

2009 (Participant)

PON 2000/2006 - Misura II.3 e Misura III.2

Project title: "Competence Center for Innovation and Transportation - C.C.I.T.", sponsorship for the realization of a Research Laboratory on Welding Certification

Duration: 12 months

Project leader: MIT - Meridionale Innovazione Trasporti Scarl

Partner: Università degli Studi di Messina

Budget: 1.000 k€

2006 - 2009 (Principal investigator)

POR Sicilia 2000/06 - Fondo Europeo per lo Sviluppo Regionale (FESR) Misura III.15 – Reti per lo Sviluppo della Ricerca Scientifica – Az. C "Potenziamento delle infrastrutture e laboratori esistenti per la realizzazione di centri per il testing di nuove tecnologie"

Project title: Research Center "Tecna Territorio" – Laboratory for Research on Materials and Production Processes (LRMPP)

Duration: 36 months

Budget: 3.481 k€

2005 – 2007 (Participant)

MIUR L.488 (2002/05)

Project title: SINAVE – High-speed vessels for innovative intermodal transportation systems

Duration: 36 months

Project leader: Consorzio CTMI (Rodriguez Cantieri Navali Spa, Tourist Ferry Boat Spa, Calzoni Spa)

Partners: Centro Ricerche Fiat, ENEA, Università degli Studi di Messina, Università degli Studi di Reggio Calabria, Autorità portuale di Messina

Budget: 255 k€

2004 – 2005 (Participant)

Research Project of National Interest (PRIN 2003)

Project title: “Environmental compatibility and structural reliability for a competitive and sustainable cabotage”

Duration: 24 months

Other Units participating to the project: Università degli Studi di Trieste (Coordinator), Università degli Studi di Genova, Università degli Studi di Messina, Università degli Studi di Napoli "Federico II"

Budget: 140 k€

2001 – 2002 (Participant)

Research Project of National Interest (PRIN 2000)

Project title: “Vibro-acoustic diagnostics: reliability design and operational safety”

Duration: 24 months

Other Units participating to the project: Università degli Studi di Genova (Coordinator), Università degli Studi di Bologna, Università degli Studi di Firenze, Università degli Studi di Messina, Università degli Studi di Padova, Università degli Studi di Perugia

Budget: 207 k€

INTRA-MURAL RESEARCH FUNDING (Principal Investigator)

PRA 2008/09

Research program: “Cure monitoring of composite materials using embedded fiber Bragg grating sensors”

Funding period: 24 months

Total award: 3.499 €

PRA 2006/07

Research program: “Measurement of the clamping pressure distribution in polymer electrolyte fuel cells using piezoresistive sensor arrays”

Funding period: 24 months

Total award: 3.419 €

PRA 2005

Research program: “In-vitro experimental evaluation of stress-shielding effects induced by intramedullary implants used for the stabilization of long bone fractures”

Funding period: 12 months

Total award: 3.210 €

PRA 2004

Research program: “Measurement of local strains induced into the femur by trochanteric Gamma nail implants used for orthopedic rehabilitation”

Funding period: 12 months

Total award: 1.895 €

PRA 2003

Research program: “Development of advanced image processing techniques for the morphometric characterization of foam-core structural sandwich”

Funding period: 12 months

Total award: 5.983 €

PRA 2002

Research program: "Design and characterization of a novel sensor for impact force measurements"

Funding period: 12 months

Total award: 3.400 €

MEMBERSHIP IN INTERNATIONAL EDITORIAL BOARDS

- *Modern Instrumentation* (MI), Scientific Research Publishing, Inc., Irvine (CA), USA
- *The Scientific World Journal*, Hindawi Publishing Corporation, New York (NY), USA
- *Mathematical Problems in Engineering*, Hindawi Publishing Corporation, New York (NY), USA

REVIEW ACTIVITIES (Research Grant Applications & Research Quality Exercise)

- Expert reviewer on behalf of the Ministry of Education and Scientific Research (MIUR) for the evaluation of research projects of national interest (PRIN).
- Expert reviewer on behalf of the Ministry of Education and Scientific Research (MIUR) for the evaluation of research projects under the program "Future in Research" (FIRB).
- Expert for the Italian Research Quality Evaluation Exercise (VQR 2004-2010) in the field of Industrial and Information Engineering (Area 09).

REVIEW ACTIVITIES (Scientific Journals)

- Review of Scientific Instruments (American Institute of Physics, Melville, NY, USA)
- Measurement Science and Technology (Institute of Physics, Bristol, UK).
- IEEE Transactions on Instrumentation and Measurement (Instrumentation and Measurement Society, Rolla, MO, USA).
- Optics and Lasers in Engineering (Elsevier Science Ltd., Oxford, UK).
- Measurement (Elsevier Science Ltd., Oxford, UK).
- Smart Materials and Structures (Institute of Physics, Bristol, UK).
- Medical Engineering & Physics (Institute of Physics and Engineering in Medicine, York, UK).
- Sensors and Actuators A: Physical (Elsevier B.V., Amsterdam, The Netherlands).
- International Journal of Impact Engineering (Elsevier Science Ltd., Oxford, UK).
- Infrared Physics and Technology (Elsevier B.V., Amsterdam, The Netherlands).
- Sensors (Molecular Diversity Preservation International (MDPI), Basel, Switzerland).
- Experimental Mechanics (Springer, New York, USA).
- OSA Applied Optics (Washington, D.C., USA)

SUPERVISION OF STUDENT RESEARCH

- Antonino Quattrocchi (2014 -), Ph.D. candidate. Title of dissertation: Development of experimental methods for active control of vibrations and vibro-acoustic noise reduction.
- Alessandra Amato (2013-2015), Post-Doc. Active infrared thermography techniques for fuel cells applications.
- Sebastiano A. Piccolo (2013-2015), M.S. Development of advanced image processing algorithms.
- Fabrizio Freni (2010-2013), Ph.D. Title of dissertation: Ultrasound-excited vibrothermography for damage detection.
- Francesco Mantineo (2009-2012), Ph.D. Ph.D. candidate. Title of dissertation: Non-destructive evaluation of materials by means of x-ray computed tomography (CT).
- Salvina Aliquò (2006-2009), Ph.D. Title of dissertation: Development of advanced measurement methods based on active infrared thermography for structural diagnostics of composite materials.

- Simone Pirrotta (2003-2006), Ph.D. Title of dissertation: Design and calibration of measurement systems based on fiber Bragg grating sensors.

RESULTS OBTAINED IN TECHNOLOGY TRANSFER AND STARTUPS CREATION

- Member of the Steering Committee of the Start-up Incubator of the University of Messina, Italy.
- Member of the Evaluation Committee for the selection of start-up proposals under the “Training and Innovation for Employment” project (FixO).

TEACHING POSITIONS

A. Ph.D. classes

Course title: “The Language of Measurements” (8 h) (2012)

Ph.D. degree in “Engineering and Chemistry of Materials”, University of Messina, Italy

B. Master classes

Course title: “Instrumentation and Measurements for Environmental Monitoring and Energy Metering” (20 h) (2012)

Postgraduate Master’s degree in “Technologies for Renewable Energies and Energy Saving”, University of Messina, Italy

Course title: “Measuring Instruments and Data Acquisition” (74 h) (2008)

Postgraduate Master’s degree in “Systems for hydrogen production and fuel cells powered electric vehicles”, University of Messina, Italy

C. Graduate classes

Course title (Faculty assignment): “Experimental Methods and Measurement Instrumentation” (from 2016)

Graduate degree in Mechanical Engineering, University of Messina, Italy

Credits: 6

Course title (Faculty assignment): “Mechanical and Thermal Measurements II” (from 2011 to 2014)

Graduate degree in Materials Engineering, University of Messina, Italy

Credits: 6

Course title (Faculty assignment): “Measurements for Structural Diagnostics” (from 2005 to 2011)

Graduate degree in Materials Engineering, University of Messina, Italy

Credits: 6

Course title: “Standards and Procedures for Mechanical Qualification” (from 2002 to 2004)

Graduate degree in Materials Engineering, University of Messina, Italy

Number of hours: 60

Course title (Faculty assignment): “Fundamentals of Measurements” (from 2000 to 2004)

Graduate degree in Materials Engineering, University of Messina, Italy

Number of hours: 60

D. Undergraduate classes

Course title (Faculty assignment): “Mechanical and Thermal Measurements I” (from 2003 to 2016)

Undergraduate degree in Industrial Engineering, University of Messina, Italy

Credits: 6

Course title (Faculty assignment): “Mechanical and Thermal Measurements” (from 2003 to 2011)

Undergraduate degree in Naval Engineering, University of Messina, Italy

Credits: 6

Course title: “Laboratory of Mechanical and Thermal Measurements” (from 2004 to 2010)

Undergraduate degree in Industrial Engineering, University of Messina, Italy

Credits: 6

Course title: "Biomechanical Engineering" (from 1999 to 2002)

Undergraduate degree in Auditory Medicine, University of Messina, Italy

Number of hours: 45

Course title: "Biomedical Instrumentation" (from 1999 to 2002)

Undergraduate degree in Auditory Medicine, University of Messina, Italy

Number of hours: 45

Course title (teaching assistant): "Aerospace Drawing" (1998)

Undergraduate degree in Aerospace Engineering, Polytechnic of Turin, Italy

Number of hours: 45

Course title (teaching assistant): "Experimental Mechanics" (1998)

Undergraduate degree in Mechanical Engineering, Polytechnic of Turin, Italy

Number of hours: 45

Course title (teaching assistant): "Industrial Technical Drawing" (1997)

Undergraduate degree in Mechanical Engineering, Polytechnic of Turin, Italy

Number of hours: 45

STUDENT MENTORING, GRADUATION AND PROFESSIONAL CERTIFICATION COMMITTEES

- Advisor of 54 undergraduate and Master Degree research thesis in the field of Experimental Mechanics
- Co-advisor of 2 undergraduate thesis in the field of Experimental Mechanics
- Chair of the Examination Committee for the following course taught at the University of Messina (since 2001): "Mechanical and Thermal Measurements I", "Mechanical and Thermal Measurements II", "Laboratory of Mechanical and Thermal Measurements", "Measurements for Structural Diagnostics", "Fundamentals of Measurements", "Standards and Procedures for Mechanical Qualification", "Biomechanical Engineering", "Biomedical Instrumentation".
- Member of the Examination Committee for the National qualification as Engineer
- Member of Ph.D. Selection Examination Committee (several times).
- Member of Ph.D. Dissertation Examination Committee (several times).

PUBLICATIONS

He published more than 100 papers in peer-reviewed international journals and conference proceedings (see list of publications)

Selection (last 5 years)

- (1) R. Montanini, A. Recupero, F. De Domenico, F. Freni, Strain sharing assessment in woven fiber reinforced 2 concrete beam using fiber Bragg grating sensors, *Sensors* (accepted for publication).
- (2) R. Montanini, A. Quattrocchi, S.A. Piccolo, A. Amato, S. Trocino, S.C. Zignani, M. Lo Faro, G. Squadrito, Real-time thermal imaging of solid oxide fuel cell cathode activity in working condition, *Applied Optics*, Vol. 55, No. 25, 7142-7148, 2016.
- (3) R. Montanini, A. Quattrocchi, S.A. Piccolo, Active thermography and post-processing image enhancement for recovering of abraded and paint-covered alphanumeric identification marks, *Infrared Physics and Technology*, Vol. 78, 24-30, 2016.
- (4) R. Montanini, A. Quattrocchi, Experimental characterization of cantilever-type piezoelectric generator operating at resonance for vibration energy harvesting, in: *Proceedings of the 12th International A.I.VE.LA. Conference on Vibration Measurements by Laser and Noncontact Techniques: Advances and Applications*, AIP Conference Proceedings vol. 1740 pp.0600031-0600039, Ancona, Italy, June 29 – July, 1 2016. (DOI:10.1063/1.4952675 - ISBN:978-0-7354-1397-9).
- (5) R. Montanini, T. Scimone, S. De Caro, A. Testa, Full-frame infrared thermal imaging of power electronics devices by means of multiple time-delayed measurements, *Quantitative InfraRed Thermography Journal*, Vol. 12, No. 2, 149–161, 2015.
- (6) R. Montanini, F. Freni, Non-contact measurement of linear thermal expansion coefficients of solid materials by infrared image correlation, *Measurement Science and Technology*, vol. 25, 015013 (8 pp.), 2014.

- (7) R. Montanini, F. Freni, Correlation between vibrational mode shapes and viscoelastic heat generation in vibrothermography, *NDT&E International*, vol. 58, pp. 43-48, 2013.
- (8) ISSN: 0963-8695 DOI: 10.1016/j.ndteint.2013.04.007
- (9) M. Latino, R. Montanini, N. Donato, G. Neri, Ethanol sensing properties of PMMA-coated fiber Bragg grating, *Procedia Engineering*, Vol. 47, pp. 1263-1266, 2012.
- (10) R. Montanini, F. Freni, G. L. Rossi, Quantitative evaluation of hidden defects in cast iron components using ultrasound activated lock-in vibrothermography, *Review of Scientific Instruments*, Vol. 83, n. 9, pp. 094902-1/8, 2012.
- (11) R. Montanini, F. Freni, Non-destructive evaluation of thick glass fibre-reinforced composites by means of optically excited lock-in thermography, *Composites: Part A – Applied Science and Manufacturing*, Vol. 43, n. 11, pp. 2075-2082, 2012.
- (12) R. Montanini, G. Squadrito, G. Giacoppo, Measurement of the clamping pressure distribution in polymer electrolyte fuel cells using piezoresistive sensor arrays and digital image correlation techniques, *Journal of Power Sources*, Vol. 196, n. 20, pp. 8484–8493, 2011.
- (13) R. Montanini, Quantitative determination of subsurface defects in a reference specimen made of Plexiglas by means of lock-in and pulse phase infrared thermography, *Infrared Physics & Technology*, Vol. 53, n. 5, pp. 363-71, 2010.
- (14) R. Montanini, V. Filardi, In vitro biomechanical evaluation of antegrade femoral nailing at early and late postoperative stages, *Medical Engineering & Physics*, Vol. 32, n. 8, pp. 889-97, 2010.