

## Carlo Baldisserri PhD - Curriculum Vitae et Studiorum

### Personal Information

**Date/Place of Birth** May 23<sup>rd</sup>, 1959  
**Gender** M

### Work Career

**Job Description** **Full Researcher**  
**Period** 27/12/2018 - present  
**Employer** Istec-CNR, via Granarolo 64, 48018 Faenza (RA)  
**Responsibilities** Istec-CNR Electrical Characterization Laboratory Responsible.  
Electrical characterization of piezoceramics, functional ceramics, and colloidal suspensions in view of both for fundamental research and applications.  
Design, construction and modification of experimental rigs for electrochemistry, photoelectrochemistry, electrorheology.  
Nanotechnology and nanotechnologies applications research projects associate.  
Development and characterization of piezoelectric sensors for applications in the real-time monitoring of machining tools.  
Design and optimization of piezoceramic-based energy harvesters as durable and maintenance-free power supplies for microelectronic circuitry.

**Job Description** **Fixed-Term Researcher**  
**Period** 01/05/2017-26/12/2018  
**Employer** Istec-CNR, via Granarolo 64, 48018 Faenza (RA)  
**Responsibilities** Istec-CNR Electrical Characterization Laboratory Responsible.  
Electrochemical characterization of colloidal suspensions-  
Nanotechnology and nanotechnologies applications research projects associate.  
Design, construction and modification of electrochemical and photoelectrochemical plants at the lab- and pilot-plant-scale for the electrochemical and photoelectrochemical degradation of organic pollutants in wastewaters.  
Dielectric and piezoelectric characterization of ceramics and piezoceramics.

**Job Description** **Research Fellow**  
**Period** 01/07/2015-30/04/2017  
**Employer** Istec-CNR, via Granarolo 64, 48018 Faenza (RA), Italy  
**Responsibilities** Research on the applications of electrochemistry to the characterization of colloidal suspensions.  
Selection, purchase, testing and managing of electrochemical laboratory equipment and materials.  
Design, construction and overhauling of an array of self-built laboratory equipment (bench dip-coater, ISO 23145-1 bench tap density tester, etc.).

**Job Description** **Technology Manager**  
**Period** 01/07/2013-30/06/2015  
**Employer** TRE Tozzi Renewable Energy SpA, via Zuccherificio 10, Mezzano (RA)  
Centro di Nanotecnologie Biomolecolari, IIT, Arnesano (LE)

<b>Responsibilities</b>	<p>Development and functional testing of hybrid photovoltaic/photovoltachromic modules based on third-generation solar cells.</p> <p>Theoretical and experimental studies for the optimized architecture and construction of glass-based photovoltaic/photovoltachromic modules by refinement of all production procedures (involving complex patterning by precision automatic screen-printing of glass frit, silver, titania, tungsten oxide, nano-Pt and optimized multi-step thermal treatments for consolidation, sintering and sealing of modules)</p> <p>Design and construction of several experimental apparatuses for measuring the photovoltachromic performance of thick films, based on photodiodes, purpose-built electronic op-amp based circuitry and general purpose electronic lab equipment.</p> <p>Production of technical reports on the progress of the above activities.</p>
<b>Job Description</b>	<b>Fixed-Term Researcher</b>
<b>Period</b>	11/2012 - 06/2013
<b>Employer</b>	Istec-CNR, via Granarolo 64, 48018 Faenza (RA)
<b>Responsibilities</b>	<p>Istec-CNR Electrical Characterization Laboratory Responsible.</p> <p>Research on piezoceramic and ceramic dielectric materials and composites for a wide range of applications (sensors, actuators, MW antennae)</p> <p>Research and development in electrophoretic deposition techniques from colloidal suspensions of ceramic particles.</p> <p>Development of data acquisition and data processing NI LabView software for the measurement of piezoelectric resonance and dielectric spectra and the characterization of electrophoretic deposition processes.</p> <p>Development and construction of experimental apparatuses.</p> <p>Teaching assignments: seminars on the theory and the applications of piezoceramic materials at the University of Bologna.</p>
<b>Job Description</b>	<b>Research Associate</b>
<b>Period</b>	02/2011 - 11/2012
<b>Employer</b>	ISTEC-CNR, via Granarolo 64, 48018 Faenza (RA)
<b>Responsibilities</b>	<p>Ceramic dielectric and piezoelectric materials and composites characterization by dielectric and piezoresonance spectroscopy.</p> <p>Design, colloidal characterization, and performance optimization of magnetic and piezoelectric ceramic powders for electrophoretic deposition applications.</p> <p>Electrophoretic deposition of ceramic materials, including the design and construction of several experimental rigs for performing electrophoretic deposition and dip-coating.</p> <p>Fine-tuning of electrophoretic deposition protocols for industrial partners.</p>
<b>Job Description</b>	<b>Contract Researcher</b>
<b>Periodo</b>	06/2010 - 02/2011
<b>Employer</b>	Consorzio SPINNER 2013, Regione Emilia-Romagna/ISTEC-CNR, via Granarolo 64, Faenza/Colorobbia Italy SpA
<b>Responsibilities</b>	<p>Research on polyol-based suspensions of metals and oxides (cobalt, iron) in view of applications in electrophoretic deposition.</p>

<b>Job Description</b>	<b>Research Fellow</b>
<b>Periodo</b>	02/2009 - 05/2010
<b>Employer</b>	ISTEC-CNR, via Granarolo 64, 48018 Faenza (RA)
<b>Responsibilities</b>	Electroacoustic characterization of colloidal suspensions of ceramic materials Design and construction of experimental rigs for electrophoretic deposition applications. Theoretical and experimental research on the electrophoretic deposition of ceramics and oxidic particles in colloidal suspensions.
<b>Job Description</b>	<b>High-School Teacher in Physics and Electronics</b>
<b>Period</b>	09/2006 - 02/2009
<b>Employer</b>	MIUR – Italian Ministry for Education, University and Research
<b>Responsibilities</b>	Teachings: Physics; Electronics; Laboratory of Electronics; Electronic Systems Examiner: Leaving Cert Examination Commission Member (Electronic Systems)
<b>Job Description</b>	<b>Research Assistant</b>
<b>Periodo</b>	09/2005 - 08/2006
<b>Employer</b>	MSSI (Materials and Surface Science Institute), University of Limerick, Limerick, EIRE
<b>Responsibilities</b>	Design and construction of an experimental setup for performing high-temperature polarization/depolarization cycles of bulk hydroxyapatite ceramics, involving measuring and recording picoamp currents in a very noisy EM environment and excluding experimental artefacts such as spurious thermocoupling effects.  NI LabView data acquisition and processing software was purposely designed to assist measurements.
<b>Job Description</b>	<b>Teaching Assistant</b>
<b>Period</b>	09/2002 - 05/2006
<b>Employer</b>	University of Limerick, Limerick, EIRE, Physics Department
<b>Responsibilities</b>	Physics/Physics Lab Teaching Assistant (1st and 2 <sup>nd</sup> year undergrads in Engineering, Science Teaching, Sport Science).
<b>Job Description</b>	<b>IRCSET (Irish Research Council for Science and Technology) Scholar</b>
<b>Period</b>	2004-2006
<b>Employer</b>	University of Limerick, Limerick, EIRE, Physics Department
<b>Responsibilities</b>	Mathematical description, design and construction of an experimental setup for measuring <i>in situ</i> spectroscopic ellipsometry data on active electrochemical interfaces, involving a series of three solid/liquid and two solid/air interfaces.  Design and implementation of an NI LabView platform for simulating <i>in situ</i> spectroscopic ellipsometry data measured on the above setup, in order to quantitatively evaluate the effects of misalignments and to precisely quantify the amount of experimental error brought about by the same.  Design and assembly of experimental apparatuses and electronic circuitry to be used in the Physics and Electrochemistry Lab.  Design and assembly of a complete and working system for measuring, recording, and processing electrochemical data, based on an array of spare GPIB- and RS-232-interfaced general purpose laboratory instruments working under the control of self-produced NI LabView code running on a GPIB/RS-232-interfaced PC.

Overhauling, upgrading, and management of an EDWARDS vacuum coater to be used to perform controlled-thickness physical vapor deposition (PVD) of thin metal films such as Ti, Cr, Cu, Au on silicon wafers.

Experimental research on the kinetics of formation and reduction of anodic thin films on bulk and thin-film copper electrodes using *in situ* spectroscopic ellipsometry (as part of the curricular activity for obtaining the PhD degree).

<b>Job Description</b>	<b>Research Associate</b>
<b>Period</b>	2000-2002
<b>Employer</b>	University of Limerick, Limerick, EIRE, Physics Department
<b>Responsibilities</b>	Design and construction of experimental solution for Physics and Electrochemistry (electronic circuitry, gas-tight electrochemical cells, reference electrodes). Preliminary investigations on the formation of oxide films on copper electrodes in the anodic regime in high pH solutions.
<b>Job Description</b>	<b>Shipping Manager/Forklift Operator</b>
<b>Period</b>	1995 - 1996
<b>Employer</b>	KNAUF di Lothar Knauf sas, 48025 Riolo Terme (RA), Italy
<b>Responsibilities</b>	Preparation and shipping of building materials according to shipping schedule. Computerized bookkeeping of shipping activity.
<b>Job Description</b>	<b>Farm'hand and Farming Labourer</b>
<b>Period</b>	1974 - 1994
<b>Employer</b>	various employers, northern Italy
<b>Responsibilities</b>	various, depending on demand.
<b>Job Description</b>	<b>Metal Sheet Worker</b>
<b>Period</b>	1977, June-September
<b>Employer</b>	ORAL di Chiodini Terenzio, Imola (BO)
<b>Responsibilities</b>	Welding/grinding during production of steel sheet items

## Academic Career

<b>Degree</b>	<b>Doctor of Philosophy (PhD, Physics)</b>
<b>Awarding Body</b>	University of Limerick, Limerick, EIRE – Physics Department
<b>Year</b>	2007
<b>Ranking</b>	Hon.s
<b>Main topics</b>	Physics, chemistry, electrochemistry, optics, deposition processes, electronics, NI LabView programming
<b>Thesis Title</b>	<i>An analysis by Spectroscopic Ellipsometry of the Structure and Electrochemistry of Copper Surfaces</i>
<b>Degree</b>	<b>Master's Degree in Applied Physics</b>
<b>Awarding Body</b>	University of Bologna
<b>Year</b>	2000
<b>Marks</b>	110/110
<b>Main Topics</b>	General physics, mathematics, chemistry, solid state physics, semiconductor physics, semiconductors electrochemistry
<b>Thesis Title</b>	<i>Electrochemical passivation of indium phosphide by cyclic voltammetry, potentiostatic experiments and AC impedance</i>

<b>Degree</b>	<b>Junior Mechanical Engineering License</b>
<b>Awarding Body</b>	Istituto Tecnico Industriale Statale, Faenza (RA), Italy
<b>Year</b>	1978
<b>Marks</b>	58/60
<b>Thesis Title</b>	N/A

### Peer-Reviewed Publications

- C. Baldisserri**, S. Ortelli, M. Blosi, A.L. Costa, *Pilot- plant study for the photocatalytic/electrochemical degradation of Rhodamine B*, Journal of Environmental Chemical Engineering 6 (2), 1794-1804
- F. Martina, A. Pugliese, M. Serantoni, **C. Baldisserri**, A. Maggiore, G. Gigli, V. Maiorano, *Large area self-powered semitransparent trifunctional device combining photovoltaic energy production, lightning and dynamic shading control*, Solar Energy Materials and Solar Cells 160 (2017) 435-443
- P. Galizia, I. V. Ciuchi, **C. Baldisserri**, C. Galassi *Bilayer thick structures based on CoFe<sub>2</sub>O<sub>4</sub> composite and niobium doped PZT obtained by electrophoretic deposition*, Journal of the European Ceramic Society 36 (2) (2016) 373-380
- C. Baldisserri**, A.L. Costa, *Electrochemical detection of copper ions leached from CuO nanoparticles in saline buffers and biological media using a gold wire working electrode*, Journal of Nanoparticle Research (2016) 18:96
- P. Galizia, **C. Baldisserri**, C. Galassi, *Microstructure development in novel titania-cobalt ferrite ceramic materials*, Ceramics International Vol. 42, Iss. 2, Part A, 2016, 2634-2641
- P. Galizia, **C. Baldisserri**, C. Capiani, C. Galassi, *Multiple parallel twinning overgrowth in nanostructured dense cobalt ferrite*, Materials and Design 109 (2016)
- R. Grisorio, L. De Marco, **C. Baldisserri**, F. Martina, M. Serantoni, G. Gigli, P. Suranna, *Sustainability of Organic Dye-Sensitized Solar Cells: the Role of Chemical Synthesis*, ACS Sustainable Chem. Eng., 2015, 3(4), 770-777
- C.S. Olariu, L. Padurariu, R. Stanculescu, **C. Baldisserri**, C. Galassi, L. Mitoseriu, *Investigation of low field dielectric properties of anisotropic porous Pb(Zr,Ti)O<sub>3</sub> ceramics: Experiment and modeling*, Journal of Applied Physics 114 (21), 214101 (2013)
- M. Aldrigo, A. Costanzo, D. Masotti, **C. Baldisserri**, I. Dumitru, C. Galassi, *Numerical and experimental characterization of a button-shaped miniaturized UHF antenna on magneto-dielectric substrate*, International Journal of Microwave and Wireless Technologies, Vol. 5, Sp. Issue 03 (2013) 231-239
- C. Baldisserri**, D. Gardini, C. Galassi, *Sharp silicon-lead zirconate titanate interfaces by electrophoretic deposition on bare silicon wafers and post-deposition sintering*, Sens. Act. A: Physical 174 (2012) 123-132
- C. Baldisserri**, D. Gardini, C. Galassi, *A controlled colloidal destabilization approach for the electrophoretic deposition (EPD) from cobalt ferrite and magnetite nanoparticles suspensions in diethylene glycol*, Key Engineering Materials 507 (2012) 85-88
- C. Baldisserri**, D. Gardini, C. Galassi, *An analysis of current transients during electrophoretic deposition (EPD) from colloidal TiO<sub>2</sub> suspensions*, Journal of Colloid and Interface Science 347 (2010), 102-111
- S.A.M. Tofail, **C. Baldisserri**, D. Haverty, D.J.B. McMonagle, J. Ehrart, *Pyroelectric surface charge in hydroxyapatite ceramics*, Journal of Applied Physics 106, 106104 (2009)

### Conference Presentations

- C. Baldisserri**, P. Galizia, V. Medri, E. Landi, C. Galassi, *Electrophoretic Deposition of aluminum Oxide Powders in Different Matrices for Alkali Bonded Coatings*, 69<sup>th</sup> Annual Meeting of the International Society of Electrochemistry (2018) (invited oral presentation)
- C. Baldisserri**, M. Blosi, S. Ortelli, L. Viale, A. L. Costa, *Electrochemical characterization of suspensions of oxidic nanoparticles in biological media*, NANOSAFE 2016, Grenoble (F) (2016) (oral presentation)
- P. Galizia, I. V. Ciuchi, F. Albertini, F. Casoli, D. Gardini, **C. Baldisserri**, C. Galassi, *Electrophoretic deposition of bilayer composite films based on CoFe<sub>2</sub>O<sub>4</sub> and Nb-doped PZT*, NanotechItaly 2015 Bologna (I) (2015) (poster presentation)



## **Peer-Reviewing**

Peer-review has been continuously carried out following up invitations by the Editing Boards of reputable Journals publishing in research fields that overlap own expertise (electrophoretic deposition, ceramic processing, electrical characterization).