Carlo Baldisserri PhD - Curriculum Vitae et Studiorum

Personal Information

May 23rd, 1959 Date/Place of Birth

Gender

Work Career

Period

Job Description Full Researcher 27/12/2018 - present

Istec-CNR, via Granarolo 64, 48018 Faenza (RA) **Employer**

Istec-CNR Electrical Characterization Laboratory Responsible. Responsibilities

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 Period

Fixed-Term Researcher 01/05/2017-26/12/2018

Istec-CNR, via Granarolo 64, 48018 Faenza (RA) **Employer**

Responsibilities Istec-CNR Electrical Characterization Laboratory Responsible.

Electrochemical characterization of colloidal suspensions-

Nanotechnology and nanotechnologies applications research projects associate.

construction and modification of electrochemical photoelectrochemical plants at the lab- and pilot-plant-scale for the electrochemical and photoelectrochemical degradation of organic pollutants in

wastewaters.

Dielectric and piezoeletric characterization of ceramics and piezoceramics.

Job Description Period

Research Fellow 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 01/07/2013-30/06/2015 Period

Employer TRE Tozzi Renewable Energy SpA, via Zuccherificio 10, Mezzano (RA)

Centro di Nanotecnologie Biomolecolari, IIT, Arnesano (LE)

Responsibilities

Development and functional testing of hybrid photovoltaic/photovoltachromic modules based on third-generation solar cells.

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)

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.

Production of technical reports on the progress of the above activities.

Job Description Period Employer Fixed-Term Researcher 11/2012 - 06/2013

Istec-CNR, via Granarolo 64, 48018 Faenza (RA)

Responsibilities

Istec-CNR Electrical Characterization Laboratory Responsible.

Research on piezoceramic and ceramic dielectric materials and composites for a wide range of applications (sensors, actuators, MW antennae)

Research and development in electrophoretic deposition techniques from colloidal suspensions of ceramic particles.

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.

Development and construction of experimental apparatuses.

Teaching assignements: seminars on the theory and the applications of piezoceramic materials at the University of Bologna.

Job Description Period Employer

Responsibilities

Research Associate 02/2011 - 11/2012

ISTEC-CNR, via Granarolo 64, 48018 Faenza (RA)

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Ceramic dielectric and piezoelectric materials and composites characterization by dielectric and piezoresonance spectroscopy.

Design, colloidal characterization, and performance optimization of magnetic and piezoelectric ceramic powders for electrophoretic deposition applications.

Electrophoretic deposition od ceramic materials, including the design and construction of several experimental rigs for performing electrophoretic deposition and dip-coating.

Fine-tuning of electrophoretic deposition protocols for industrial partners.

Job Description Periodo Employer **Contract Researcher** 06/2010 - 02/2011

Consorzio SPINNER 2013, Regione Emilia-Romagna/ISTEC-CNR, via Granarolo 64,

Faenza/Colorobbia Italy SpA

Responsibilities

Research on polyol-based suspensions of metals and oxides (cobalt, iron) in view

of applications in electrophoretic deposition.

Job DescriptionResearch FellowPeriodo02/2009 - 05/2010

Employer ISTEC-CNR, via Granarolo 64, 48018 Faenza (RA)

Responsibilities 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.

Job Description High-School Teacher in Physics and Electronics

Period 09/2006 - 02/2009

Employer MIUR – Italian Ministry for Education, University and Research

Responsibilities Teachings: Physics; Electronics; Laboratory of Electronics; Electronic Systems

Examiner: Leaving Cert Examination Commission Member (Electronic Systems)

Job DescriptionResearch AssistantPeriodo09/2005 - 08/2006

Employer MSSI (Materials and Surface Science Institute), University of Limerick, Limerick,

EIRE

Responsibilities 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.

Job DescriptionTeaching AssistantPeriod09/2002 - 05/2006

Employer University of Limerick, Limerick, EIRE, Physics Department

Responsibilities Physics/Physics Lab Teaching Assistant (1st and 2nd year undergrads in

Engineering, Science Teaching, Sport Science).

Job Description IRCSET (Irish Research Council for Science and Technology) Scholar Period 2004-2006

Employer University of Limerick, Limerick, EIRE, Physics Department

ResponsibilitiesMathematical description, design and construction of an experimental setup for measuring *in situ* 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 *in situ* 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).

Job Description Research Associate

Period 2000-2002

Employer University of Limerick, Limerick, EIRE, Physics Department

Responsibilities 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.

Job Description Shipping Manager/Forklift Operator

1995 - 1996 Period

Employer KNAUF di Lothar Knauf sas, 48025 Riolo Terme (RA), Italy

Responsibilities Preparation and shipping of building materials according to shipping schedule.

Computerized bookkeeping of shipping activity.

Job Description Farm'hand and Farming Labourer

1974 - 1994 Period

Employer various employers, northern Italy Responsibilities various, depending on demand.

Job Description Metal Sheet Worker Period 1977, June-September

ORAL di Chiodini Terenzio, Imola (BO) **Employer**

Responsibilities Welding/grinding during production of steel sheet items

Academic Career

Degree Doctor of Philosophy (PhD, Physics)

Awarding Body University of Limerick, Limerick, EIRE – Physics Department

2007 Ranking Hon.s

Main topics Physics, chemistry, electrochemistry, optics, deposition processes, electronics, NI

LabView programming

Thesis Title An analysis by Spectroscopic Ellipsometry of the Structure and Electrochemistry of

Copper Surfaces

Degree Master's Degree in Applied Physics

Awarding Body University of Bologna

2000 Year Marks 110/110

Main Topics General physics, mathematics, chemistry, solid state physics, semiconductor

physics, semiconductors electrochemistry

Thesis Title Electrochemical passivation of indium phosphide by cyclic voltammetry,

potentiostatic experiments and AC impedance

Degree Junior Mechanical Engineering License

Awarding Body Istituto Tecnico Industriale Statale, Faenza (RA), Italy

Year 1978 Marks 58/60 Thesis Title 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 CoFe₂O₄ 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)O₃ 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 TiO₂ 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*, 69th 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 CoFe₂O₄ and Nb-doped PZT*, Nanotechltaly 2015 Bologna (I) (2015) (poster presentation)

- S. Failla, **C. Baldisserri**, A.L. Costa, D. Sciti, *Electrophoretic deposition of dispersion ZrB2 and SiC powder on woven carbon fiber for the processing of novel UHTCMCs*, Materials.it, Catania (I) (poster presentation)
- P. Galizia. I. V. Ciuchi, D. Gardini, **C. Baldisserri**, C. Galassi, *Electrophoretic deposition of bilayer composite films based on CoFe₂O₄/TiO₂ and PZT*, Ceramics for Energy-CEn 2015 Faenza (I) (2015) (poster presentation)
- P. Galizia, **C. Baldisserri**,I. V. Ciuchi, C. Galassi, *Investigation of new magneto-dielectrictitania-cobalt ferrite composites*, , E-MRS 2014 Fall Meeting, Warsaw (PL) (2014) (oral presentation)
- P. Galizia, **C. Baldisserri**, I.V. Ciuchi, C. Galassi, *PZT film on silicon by electrophoretic deposition*, , Electrophoretic deposition: fundamentals and applications, Hernstein(A) (2014) (oral presentation)
- P. Galizia, **C. Baldisserri**, C. Capiani, C. Galassi, *Structure analysis of cobalt ferrite-titania composite* Electroceramics XIV, Bucarest (RO) (2014) (oral presentation)
- P. Galizia, **C. Baldisserri**, C. Galassi, *Thick composite magnetoelectric films produced by electrophoretic deposition,* Electrophoretic deposition: fundamentals and applications, Hernstein, (A) (2014) (poster presentation)
- M. Serantoni, **C. Baldisserri**, F. Martina, G. Gorni, 12x17 glass frit-sealed smart window prototype integrating DSSC and electrochromic screen printed sections, Workshop Photovoltaics: New frontiers and applications, Dhitech SCARL, Lecce (I) (2014) (poster presentation)
- P. Galizia, **C. Baldisserri**, C. Galassi, *Thick dielectric films produced by electrophoretic deposition*, The tenth student meeting SM-2013, Processing and Applications of Ceramics, Novi Sad (SRB) (2013) (poster presentation)
- C. Galassi, M. Cernea, **C. Baldisserri**, A. Ibanescu, S. Sandu, V. Kunser, C. Capiani, *Influence of the method of preparation and barium concentration on the properties of* $Ba_xSr_{(1-x)}Fe_{12}O_{19}$ (x=0-0.35) ferrites, International Symposium on Applications of Ferroelectrics European Conference on the Applications of Polar Dielectrics International Symposium Piezoresponse Force Microscopy and Nanoscale Phenomena in Polar Materials (ISAF ECAPD e PFM), Aveiro (PG) (2012) (oral presentation)
- **C. Baldisserri**, D. Gardini, C. Galassi, *Integration of Niobium-Doped Lead ZirconateTitanate on Bare Silicon Wafer by Electrophoretic Deposition (EPD)*, COST MPO904 Action "Single-and multiphase ferroics and multiferroics with restricted geometries" & IEEE-ROMSC 2012, Iasi (RO) (2012) (oral presentation)
- E. Gassama, **C. Baldisserri**, D. Calvetti, C. Galassi, E. Somersalo, *Inverse Problem in Piezoelectricity*, 7. IMA Workshop: NSF PIRE Summer School for Graduate Students New frontiers in multiscale analysis and computing for materials, Minneapolis (USA) (2012) (poster presentation)
- **C. Baldisserri**, D. Gardini, C. Galassi, *EPD of Metal Oxide Nanoparticles from Polyol-Based Colloidal Suspensions*, 4th International Conference on Electrophoretic Deposition: Fundamental and Applications, (EPD 2011), Puerto Vallarta (Mexico) (2011) (oral presentation)
- C. Galassi, F. Cordero, F. Craciun, F. Trequattrini, C. Capiani, **C. Baldisserri**, *Processing features and structural transformations in the ferroelectric perovskite Na0.5Bi0.5TiO3-BaTiO3*, Workshop COST Action MP904 in European Meeting on Ferroelectricity 2011, Bordeaux (F) (2011) (oral presentation)
- **C. Baldisserri**, D. Gardini, C. Galassi, *Electrostatic and kinetic aspects of the electrophoretic deposition of ceramic materials*, SHAPING 4 Conference, Madrid (E) (oral presentation)

Technical Reports

- C. Galassi, C. Baldisserri, The CNR-ISTEC Electric Characterizations Laboratory (2013, in Italian)
- **C. Baldisserri**, C. Galassi, *Electric and Piezoelectric Characterization of Piezoelectric Actuators* (2013, in Italian)
- C. Baldisserri, C. Galassi, Piezoelectric Varnish (2012, in Italian)

Book Chapters

D. Gardini, **C. Baldisserri**, C. Galassi, *The central role of interparticle forces in colloidal processing of ceramics*, in Colloid and Interface Chemistry for Nanotechnology, CRC Press, Taylor & Francis Group 2013

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).