PERSONAL INFORMATION

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21 May 1981

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RESEARCH EXPERIENCE

Synthesis of hybrid nanocrystals based on oxide and metal domains (TiO_2, Fe_2O_3, Pt, Ag) and their application in photocatalysis.

EDUCATION AND TRAINING

University of Lecce	March 2007-March 2010 PhD student in "Nanoscience" at NNL of CNR INFM, ISUFI-Istituto superiore di formazione interdisciplinare, in Lecce (Italy)
University of Bari	April 2006 Degree in Chemistry Thesis in Materials Chemistry entitled: "*Nanocrystalline heterostructures based on titanium dioxide and iron oxide*" Final Mark: 110/110 with honours
Liceo Scientifico "Dante Alighieri" Matera	July 2000 High School Diploma, Scientific School Final Mark: 100/100
List of publications in peer-reviewed journals	D. Fragouli, B. Torre, G. Bertoni, **R. Buonsanti**, R. Cingolani, A. Athanassiou "Formation and Microscopic Investigation of Iron Oxide Aligned Nanowires Into Polymeric Nanocomposite Films" *Microscopy Research and Tecnique* **2010**, doi:10.1002/jemt.20848 **R. Buonsanti**, E. Carlino, V. Grillo, C. Giannini, F. Gozzo, M.Garcia-Hernandez, M.A. Garcia, R. Cingolani, P.D. Cozzoli Architectural Control of Seeded Grown Iron Oxide/TiO2 Nanorod Heterostructures: The Role of Seeds in Topology Selection" *J. Am. Chem. Soc.* **2010**, 132, 2437–2464 D. Fragouli, **R. Buonsanti**, G. Bertoni, A. Falqui, C. Sangregorio, C. Innocenti, D. Gatteschi, P.D. Cozzoli, A. Athanassiou, R. Cingolani, "Dynamical formation of spatially localized arrays of aligned nanowires in plastic

	films with magnetic anisotropy." ACS Nano 2010, 4, 1873 V. Petkov, P. D. Cozzoli, **R. Buonsanti**, R. Cingolani, Y. Ren "Size, shape and internal atomic ordering of nanocrystals by atomic pair distribution functions: a comparative study of □-Fe_2O_3 nanosized spheres and tetrapods" J. Am. Chem. Soc. 2009 *131* (40), 14264–14266 **R. Buonsanti**, E. Snoeck, C. Giannini, F. Gozzo, M. Garcia-Hernandez, M. A. Garcia, R. Cingolani, P. D. Cozzoli "Colloidal semiconductor-magnetic heterostructures based on iron-oxide-functionalized brookite nanorods" Phys. Chem. Chem. Phys. 2009, 11 (19), 3680-3691 **R. Buonsanti**, V. Grillo, E. Carlino, C. Giannini, T. Kipp, R. Cingolani and P. D. Cozzoli "Nonhydrolitic synthesis of high quality anisotropically shaped brookite TiO2 nanocrystals" *J. Am. Chem. Soc.*, 2008, *130* (33) 11223–11233 R. Di Corato, P. Piacenza, M. Musarò, **R. Buonsanti**, P.D. Cozzoli, M. Zambianchi, G. Barbarella, R. Cingolani, L.Manna, T. Pellegrino "Magnetic-fluorescent colloidal nano-beads: preparation and exploitation in cell separation experiment" *Macromol. Biosci.* 2009, *9* (10), 952-958 R. Di Corato, A. Quarta, P. Piacenza, A. Ragusa, A. Figuerola, **R. Buonsanti**, R. Cingolani, L. Manna, T. Pellegrino "Water solubilization of hydrophobic nanocrystals by means of poly(maleic anhydride-alt-1-octadecene)" *J. Mater. Chem.* 2008, *18* (17), 1991-1996 G. Caputo, C. Nobile, **R. Buonsanti**, T. Kipp, L. Manna, R. Cingolani, P. D. Cozzoli, A. Athanassiou "Determination of surface properties of various substrates using TiO_2 nanorod coatings with tuneable characteristics" Journal of Materials Science 2008, 43, 3474 M. Casavola, **R. Buonsanti**, G. Caputo, P. D. Cozzoli, "*Colloidal strategies for preparing oxide-based hybrid nanocrystals*", Eur. J. Inorg. Chem. 2008, (6), 837-854 **R. Buonsanti**, M. Casavola, G. Caputo, P. D. Cozzoli,

	"*Advances in the chemical fabrication of complex multimaterial nanocrystals*", *Recent Pat. Nanotechnol.* 2007, 1 (3), 224-232 **R. Buonsanti**, V. Grillo, E. Carlino, C. Giannini, M. L. Curri, C. Innocenti, C. Sangregorio, K. Achterhold, F. G. Parak, A. Agostiano, P. D. Cozzoli "Seeded Growth of Asymmetric Binary Nanocrystals Made of a Semiconductor TiO_2 Rodlike Section and a Magnetic □-Fe_2O_3 Spherical Domain" *Journal of the American Chemical Society* 2006, 128(51), 16953 – 16970 G. Caputo, **R. Buonsanti**, M. Casavola, P. D. Cozzoli "*Synthetic strategies to multi-material hybrid nanocrystals*", Advanced wet-chemical synthetic approaches to inorganic nanostructures, P. D. Cozzoli Ed.; Transworld Research Network, Kerala, India, 2008, chapter 14 (pp. 407-453), ISBN 978-81-7895-361-8)
Contribution to international congresses and schools	**4th Nanotail meeting 2009-**Heraclion (Crete), oral presentation entitled: "Thermodynamic v.s. Kinetics control in TiO_2 nanocrystal growth"; **NSTI Nanotech 2009**-Houston (U. S. A.), oral presentation entitled*: "Nanocristalline Heterostructures based on a titanium dioxide rod section "*; **SPEA5 2008**–Solar Chemistry and Photocatalysis: Environmental Applications-Palermo (Italy), poster presentation entitled "Nonhydrolytic Synthesis of High-Quality Anisotropically Shaped Brookite TiO_2 Nanocrystals"; **NANAX-3**-Nanoscience with Nanocrystals - Lecce, Italy, oral presentation entitled: *"Colloidal magnetic-semiconductor oxide heterostructures: site-selective epitaxial growth of spherical □-Fe_2O_3 domains onto phase-controlled TiO_2 nanorods"*; **MRS 2008**-Materials Research Society- San Francisco (U. S. A.), oral presentation entitled*: "Colloidal magnetic-semiconductor oxide heterostructures";* **NTNE 2007-** Nanotech Northern Europe - Helsinki, Finland, oral presentation entitled: *"Colloidal synthesis and growth mechanism of asymmetric nanocrystal heterostructures made of a semiconductor titania rod-like section and a magnetic iron oxide spherical domain"*. **Advanced School on Scanning Electron Microscopy in Materials Science 2007-**Lecce, Italy **PANAMA Summer School 2005-**Patterning at the nanoscale-Toulouse, France

RESEARCH EXPERIENCE

University of Graz (Austria)	March 2009 Visiting student at the Christian Doppler Laboratory for Microwave Chemistry for nanocrystal synthesis assisted by microwave
University of Palermo (Italy)	December 2008 Visiting student in the Photocatalysis Group (DCPM) for photocatalytic tests on titanium dioxide nanorods
NNL (National Nanotechnology Laboratory)-Lecce	September 2006 - March 2007 Post graduate fellowship on nanocrystal synthesis for drug delivery
University of Bari (Italy)	May 2006 - July 2006 Post graduate fellowship on nanocrystal synthesis and photocatalytic application

PERSONAL SKILLS AND EXPERTISE

Mother tongue	Italian
Other languages	Excellent read and written, finely spoken English.
Technical skills and expertise	• Chemical synthesis of inorganic nanocrystals by means of colloidal techniques; • Use of standard air-free techniques (Schlenk-line, glove box); • Electron microscopy characterization of nanocrystals: SEM, TEM; • Spectroscopic investigation techniques: UV-Vis, FT-IR, Raman, powder XRD, ICP-AES; Good knowledge of Microsoft Office and software for scientific data handling (Igor Pro, Origin, Advantage, Multipack, i-TEM).
References	**Dr. P. Davide Cozzoli** Scuola Superiore ISUFI- University of Salento NNL (National Nanotechnology Laboratory) of CNR-INFM, Unità di Ricerca IIT, Via per Arnesano, Km 5; 73100 Lacce (Italy) E-mail: davide.cozzoli@unile.it phone: +39-0832-298231 **Dr. Liberato Manna** Istituto Italiano di Tecnologia, IIT, via Morego 30, 16163 Genova, (Italy) E-mail: liberato.manna@iit.it phone: +39 010 71781 502 **Prof. Roberto Cingolani** National Nanotechnology Laboratory of CNR-INFM, Unità di Ricerca IIT, Via per Arnesano, Km 5, 73100 Lecce (Italy);Istituto Italiano di Tecnologia, IIT, via Morego 30, 16163 Genova, (Italy) E-mail: roberto.cingolani@unile.it

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