

CV Simona Boninelli

Position: Researcher
Institute for Microelectronics and Microsystems
Italian Research National Council (IMM-CNR)
Catania, Italy
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EDUCATION AND WORK EXPERIENCE

- 07.2001 M.S in Physics (110/110), University of Catania, Italy
- 2001-2004: PhD. in Physics (cum laude) University of Catania, Italy. Thesis entitled: "Properties and Evolution of Si Nanoclusters studied by Energy Filtered Transmission Electron Microscopy"
- 2004-2005: Research grant at MATIS INFM, Catania, Italy
- 2005-2006: Postdoc fellowship on "Transmission electron microscopy study of defects in Si", CEMES-CNRS, Toulouse, France
- 2006: Research grant on "Study of materials by ion beams", Physics Department of University of Catania, Italy
- 2006-2008: Postdoc fellowship on "Structural characterization of Si based materials", at MATIS CNR-INFM, Catania, Italy
- 2008-2009: Team Leader at Italian Institute of Technology, Genoa, Italy, Nanochemistry Facility, Electron Microscopy Group
- From 2009 to today: Researcher at IMM-CNR, Catania. Responsible of the Electron Microscopy Labs at IMM.CNR

OTHER PROFESSIONAL POSITIONS

- 2012: Expert review of proposal submitted to the Center for Nanophase Materials Sciences, that is a national user facility at Oak Ridge National Laboratory in the USA sponsored by the United States Department of Energy's Office of Basic Energy Sciences
- 2012-2013: Member of the technical committee engaged to evaluate the acceptance test of the "Mask Aligner System" and the "Aberration Corrected Transmission Electron Microscope" installed at the IMM-CNR, Catania
- July 2015: Invited Researcher at Cemes-CNRS, Toulouse (France) in the context of the project NEXT, Reference: NEXT tenders - April 2015, <http://www.next-toulouse.fr/>
- 2016 General chair of "6th International conference on nanostructures and nanomaterials self-assembly" 3-8 July 2016, Giardini Naxos (ME), Italy
- 2017 Main organizer of symposium R of the European Materials Research Society Conference 2017 Spring Meeting 22-27 May 2017 Strasburgo, Francia
- 2018 General chair of "7th International conference on nanostructures and nanomaterials self assembly" 2-6 July 2018, Carqueiranne, France
- 2018 1th Joint Workshop STMicroelectronics- IMM CNR: "Electron Microscopy - A bridge between research and industry", Catania, 2018 September 24th
- 2018 Member of Board of Delegates of European Materials Research Society
- 2019 Co-organizer of symposium P of the European Materials Research Society Conference 2019 Spring Meeting 27-31 May 2019 Nice, Francia

REVIEWER ACTIVITY

- 2017 Editor of the Thematic Series “Self-assembly of nanostructures and nanomaterials II”, Editors: I. Berbezier, M. De Crescenzi and S. Boninelli, Beilstein Journal of Nanotechnology
- 2018 Editor of the Special Issue “Nanoparticles in Dielectric Matrix: From Synthesis to Device Applications for Photonics, Electronics, and Bio Sensing”, PHYSICA STATUS SOLIDI A-APPLICATIONS AND MATERIALS SCIENCE, Wiley.
- 2019 Editor of the Thematic Series “Self-assembly of nanostructures and nanomaterials ”, Editors: I. S. Boninelli, Berbezier, M. De Crescenzi and. Grosso, Physica Status Solidi B: Basic Solid State Physics Wiley, in preparation
- From 2008 to today: Referee of different international scientific journals such as Journal of Applied of Physics, Microscopy and Microanalysis, Applied Surface Science, Beilstein Journal of Nanotechnology.

TEACHING AND TUTORING ACTIVITY

- 2013-2014 “ Microscopy techniques for the characterization of thin films”, 30 hours, in the frame of the project “Electronics on plastics for smart disposable”, Physics Dept.-Un. of Catania
- “Scanning and Transmission Electron Microscopy”, 32 hours, in the contest of the projects “New photovoltaics technologies for smart systems integrated in buildings”, Physics Dept.- Un. of Catania
- Training Activity “ Determination of the morphology of nanostructured materials by Transmission Electron Microscopy”, 85 hours, Physics Dept.-Un. of Catania
- 2012-2014: “Theoretical and practical course on Transmission Electron Microscopy at atomic resolution”, 270 hours in the frame of the project “Beyond-nano” at the IMM-CNR
- 2014- 2015: “Laboratorio di materiali e nanostrutture” , 60 ore Corso di Laurea Magistrale in Fisica, Dip. Di Fisica e Astronomia, Un. Degli Studi di Catania
- 2017: “Transmission Electron Microscopy: from conventional to advanced investigation of materials, at the nanoscale and beyond” at XXIV Escuela International de Verano en Ciencia y Tecnología de Materiales, IMRE, Universidad de La Habana
- 2018, January 11th , University of Rome Tor Vergata, Phys Dept. “Introduction to Transmission Electron Microscopy”.
- 2018- 2019: “Laboratory of Nanomaterials and Nanostructures” , 66 ore Corso di Laurea Magistrale in Fisica, Dip. Di Fisica e Astronomia, Un. Degli Studi di Catania
- Tutor of 6 Master Thesis and a PhD Thesis in Physics at the University of Catania, Scientific Responsible of 3 post docs and post master degree scholarship at IMM-CNR Catania

AWARD

2007: Young researcher awards “Contributi allo sviluppo della nanoscienza e/o delle nanotecnologie”, Accademia Gioenia, Catania, Italy

RESEARCH ACTIVITY

The research activity is mainly focused on the study of structural properties of semiconductor based materials conducted by means of advanced transmission electron microscopy techniques. At first, my works were devoted to correlate the optical and structural properties of silicon nanostructures for the realization of light emitting devices based on silicon nanocrystals. During my staying at CEMES, my scientific interest concerned the optimization of the silicon ultra-shallow junctions for microelectronics. The research activity was devoted to understand the physical mechanisms that rule the dopant diffusion, its electrical activity and the role played by extended defects induced after ion implantation. During my experience in IIT

in Genova, I was involved in the realization of TEM laboratories and in the installation of scanning and transmission electron microscopes.

Nowadays I am the responsible of the Electron Microscope laboratory in the institute IMM-CNR of Catania and member of Beyondnano group (<http://www.beyondnano.it/simona-boninelli>). My research activity is devoted to the comprehension of the structural properties of Si, Ge, and SiC based nanomaterials. I am co-author of more than 90 scientific papers published in international journals, 3 chapters of book and editor of three thematic series. I'm a regularly invited speaker at international conferences and colloquia.

BIBLIOMETRICS INDICATORS FROM ISI WEB OF KNOWLEDGE (update 2020 January):

Number of publications: 95

H-index:23

Total citations: 2050

5 SELECTED PAPERS

1. "Formation and evolution of luminescent Si nanoclusters produced by thermal annealing of SiO_x films"
F. Iacona, C. Bongiorno, C. Spinella, **S. Boninelli** and F. Priolo;
J. Appl. Phys. **95**, 3723 (2004)
2. "CdSe/CdS/ZnS Double Shell Nanorods with High Photoluminescence Efficiency and Their Exploitation As Biolabeling Probes"
S. Deka, A. Quarta, M. G. Lupo, A. Falqui, **S. Boninelli**, C. Giannini, G. Morello, M. De Giorgi, G. Lanzani, C. Spinella, R. Cingolani, T. Pellegrino, and L. Manna
J. Am. Chem. Soc., 2009, 131 (8), pp 2948–2958 (2009)
3. "Room-temperature all-silicon photonic crystal nanocavity light emitting diode at sub-bandgap wavelengths"
A. Shakoor, R. Lo Savio, P. Cardile, S. Portalupi, D. Gerace, K. Welna, **S. Boninelli**, G. Franzò, F. Priolo, T.F. Krauss, M. Galli, L. O'Faolain Laser & Photonics Reviews 7, 114 (2013)
4. "New strategies to improve the luminescence efficiency of Eu ions embedded in Si-based matrices"
S. Boninelli, G. Bellocchi, G. Franzò, M. Miritello, and F. Iacona
J. of Appl. Phys 113, 143503 (2013)
5. "Growth Mechanisms of Inductively-Coupled Plasma Torch Synthesized Silicon Nanowires and their associated photoluminescence properties"
M. Agati, G. Amiard, V. Le Borgne, P. Castrucci, R. Dolbec, M. De Crescenzi, M. A. El Khakani and **S. Boninelli**
Sci. Rep. 6, 37598, (2016)

30 Gennaio 2020