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Enrico Sangregorio

Material Scientist

Work Experiences

Doctoral Researcher in Materials Science and Nanotechnology | 12/2021 – Present Day
Department of Physics and Astronomy "Ettore Majorana", University of Catania – Italy

- Simulated, designed, and fabricated novel Silicon Carbide-based detectors for ionizing radiations, with different designs and geometries based on the application;
- Planned and performed characterization and detection-test experiments;
- Analyzed data and authored four scientific articles, including one as the corresponding author and one as first author;
- Actively participated at experiments within the framework of European Research Projects such as *RADIATE* and *EURO-LABS*;
- Participated as a visiting researcher at PSI (Switzerland) and CNM (Spain) for a total of seven months.

Abroad Research Experiences (For a total of 7 months)

- **Visiting Researcher |** 02/05/2023 – 30/06/2023
  Institut de Microelectrònica de Barcelona (IMB), Barcelona (Spain)
  Main Tasks: Sentaurus TCAD simulation toolkit training and first SiC detectors simulations.

- **Visiting Researcher |** 02/10/2022 – 17/12/2022 and 08/01/2023 – 10/03/2023
  Paul Scherrer Institut (PSI), Villigen (Switzerland)
  Main Tasks: Development and fabrication of SiC Bulk and Membrane detectors for X-rays, fission fragments and ions, using clean-room lithography and etching processes and Synchrotron tests at the Swiss Light Source (SLS).

European Projects Involvement and Beamtime Experiences

- **Proposer** and **Remote Researcher |** 06/03/2023 – 10/03/2023
  Ruđer Bošković Institute, Zagreb (Croatia)
  Participated in a beamtime at the Ion Accelerator Facility within the framework of the European Project "*EURO-LABS*"

- **On-site Researcher |** 18/09/2022 – 24/09/2022
  Ruđer Bošković Institute, Zagreb (Croatia)
  Participated in a beamtime at the Ion Accelerator Facility within the framework of the European Project "*RADIATE*"

- **On-site Researcher |** 14/08/2022 – 20/08/2022
  Paul Scherrer Institute (PSI), Villigen (Switzerland)
  Participated in a beamtime at the Swiss Light Source (SWL)

- **On-site Researcher |** 02/05/2022 – 06/05/2022
  Ruđer Bošković Institute, Zagreb (Croatia)
  Participated in a beamtime at the Ion Accelerator Facility within the framework of the European Project "*RADIATE*"

Catania, 10/10/2024

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International Conferences & School Attended

- **European Material Research Society (E–MRS) Fall Meeting 2024.**
  Warsaw (Poland), 16/09/2024 – 19/09/2024.
  Oral Presentation.
  Symposium H – Integration of advanced materials on silicon: from classical to neuromorphic and quantum applications.

- **2nd Workshop on Multi-Functional Materials and Sustainability.**
  Catania (Italy) – Scuola Superiore di Catania, 03/07/2024 – 05/07/2024.
  Poster Presentation.

- **European Material Research Society (E–MRS) Spring Meeting 2024.**
  Strasburg (France), 27/05/2024 – 31/05/2024.
  Poster Presentation and **Best Poster Award**.
  Symposium L – ALTECH 2024 – Analytical techniques for accurate nanoscale characterization of advanced materials.

- **1st Edition IMM Doctoral Summer School** – From Micro To Nano: Synthesis, Characterization and Modeling for Future Electronics and Sensing.
  Castro Marina, Lecce (Italy) – 13/05/2024 – 17/05/2024.

Scientific Publications

- Medina, E.; Trovato, G.; Calcagno, L.; Desjardins, K.; Finizio, S.; Kalbfleisch, S.; Milluzzo, G.; Romano, F.; **Sangregorio, E.**; Moscato, S.; Vignati, A.; Camarda, M. Ultra-thin Silicon Carbide free-standing membrane as beam intensity and position monitors for X-ray beamlines.
  Under Preparation.

- **Sangregorio, E.**; Calcagno, L.; Medina, E.; Crnjac, A.; Jakšic, M.; Vignati, A.; Romano, F.; Milluzzo, G.; De Napoli, M.; Camarda, M. Single-Ion Counting with an Ultra-Thin-Membrane Silicon Carbide Sensor. Materials 2023, 16, 7692.
  First Author.

- Romano, F.; Milluzzo, G.; Di Martino, F.; D'Oca, M.C.; Felici, G.; Galante, F.; Gasparini, A.; Mariani, G.; Marrale, M.; Medina, E.; Pacitti, M.; **Sangregorio, E.**; Vanreusel, V.; Verellen, D.; Vignati, A.; Camarda, M. First Characterization of Novel Silicon Carbide Detectors with Ultra-High Dose Rate Electron Beams for FLASH Radiotherapy. *Applied Sciences* 2023, 13, 2986.

- Medina, E.; **Sangregorio, E.***; Crnjac, A.; Romano, F.; Milluzzo, G.; Vignati, A.; Jakšic, M.; Calcagno, L.; Camarda, M. Radiation Hardness Study of Silicon Carbide Sensors under High-Temperature Proton Beam Irradiations. *Micromachines (Basel)* 2023, 14, 166.
  Corresponding Author.

- Meli, A.; Muoio, A.; Reitano, R.; **Sangregorio, E.**; Calcagno, L.; Trotta, A.; Parisi, M.; Meda, L.; La Via, F. Effect of the Oxidation Process on Carrier Lifetime and on SF Defects of 4H SiC Thick Epilayer for Detection Applications. *Micromachines (Basel)* 2022, 13, 1042.

Academic Background

Master of Science, Chemistry of Materials (LM-54) | 06/2021
Department of Chemical Sciences, University of Catania – Italy
Final Marks: 110/110 cum Laude.
Thesis: Vibrational Spectroscopy of Molecular Ices subjected to Ion Beam Irradiation and Their application in Astrophysics.
Fellowship: National Institute of Astrophysics (INAF) – Astrophysical Observatory of Catania (01/2020 – 12/2020).
Thesis Tutors: Prof. Giuseppe Romano Compagnini (UniCT), Dr. Maria Elisabetta Palumbo (INAF).

Bachelor of Science, Industrial Chemistry (L-27) 11/2018
Department of Chemical Sciences, University of Catania – Italy.
Final Marks: 110/110 cum Laude.
Thesis: Photocatalytic degradation of phenol on TiO_2-Zeolite catalysts.
Thesis Tutor: Prof. Salvatore Scirè (UniCT).

Catania, 10/10/2024