

DEBORA COSTANTINO

ABOUT ME

Dynamic and self-motivated professional with excellent interpersonal skills and a focus on continuous improvement. Dedicated to leveraging technical skills and knowledge to contribute to innovative projects in the field of chemical sciences and microelectronics.

PROFESSIONAL EXPERIENCE

Reserch fellow at CNR - IMM (Institute for Microelectronics and Microsystems)

Catania | January 2023 - ongoing (until March 2025)

Project: EMPHASIS - “Realizzazione di celle di memoria nanometriche attraverso litografia a fascio elettronico e loro caratterizzazione”

Acquired techniques:

- **Electron-Beam Lithography (EBL):** utilized advanced techniques for creating nanometric memory cells. Utilizing the RAITH 150 system to define patterns at the nanometric scale.
- **Scanning Electron Microscopy (SEM):** conducted morphological and structural characterization of devices using the integrated SEM within the RAITH 150 to ensure precision and quality in fabrication processes.
- **Thin Film Deposition:** Employed **sputter** and **evaporator** for controlled material deposition.
- **Electrical Characterizations:** Measured material resistivity using a **four-point probe** connected to a **Keithley 4200A-SCS Parameter Analyzer**.
- **Climatic Chamber for Temperature and Humidity testing:** Use of the Smart-THB climate chamber to simulate extreme environmental conditions and collect performance data. Execution of H3TRB tests to evaluate the resistance of electronic components in high humidity and temperature environments.
- **Nanoindentation Execution:** Conducted hardness tests and measured the elastic modulus of materials using a nanoindenter. Performed detailed analysis of load-displacement curves, including interpretation to extract information on mechanical properties at the nanometer scale, such as hardness and elastic modulus.
- **Sensofar 3D Profilometer:** Conducted precision surface measurements to analyze roughness, defect sizes, and other surface characteristics. Utilized optical interferometry and confocal scanning technologies to obtain detailed profiles and high-resolution images of surfaces.

PERSONAL INFORMATION

 

 

 

 

Driving licence: B

SOFT SKILL

- Team work
- Flexibility
- Leadership
- Problem Solving
- Precision
- Achievement of objectives
- Ability to work under pressure
- Learning ability

DIGITAL SKILLS

MS Office

OriginLab

ChemDraw Professional

LANGUAGES

Mother language: Italian

Other languages: English (B2)

Service Activities for STMicroelectronics

Catania | April 2023 - ongoing (until March 2025)

During my research period, I acquired advanced skills in using the Scanning Acoustic Microscope (SAM) and Instron testing equipment. These techniques were subsequently applied to provide specialized services to STMicroelectronics, supporting their projects with detailed analyses and precise results. Thanks to the professional nature of my research grant, I had the opportunity to collaborate directly with the company, contributing to industrial projects and further developing my technical skills. My primary responsibilities included:

Scanning Acoustic Microscope (SAM)

- **Substrate Integrity Analysis:** Utilized the Scanning Acoustic Microscope (SAM) to evaluate the integrity of the substrates in power devices. Identified and analyzed the presence of cracks, delaminations, and voids within the devices, ensuring a thorough assessment of their condition.
- **Reporting and Result Interpretation:** Prepared detailed reports on the analysis results, including the identification of defects and issues. Collaborated with the STMicroelectronics team to interpret the results and provide technical recommendations, ensuring that conclusions were clear and actionable for process improvements.
- **Deadline Management:** Adhered strictly to delivery deadlines to ensure that analysis results and reports were provided in a timely manner, thus supporting the ongoing development and production activities of STMicroelectronics.

Mechanical Testing with Instron:

- **Three-Point Bending Tests:** Subjected samples to loads until fracture to determine their flexural strength and stiffness. The results provided detailed information on the materials' capacity to withstand bending forces.
- **Reporting and Result Interpretation:** Prepared reports on the results of the analyses and mechanical measurements, including the identification of defects and issues.

Internship at CNR - IC (Cristallography institute)

Catania | January 2022 - June 2022

Master's degree thesis title: "Caratterizzazione funzionale e strutturale della carnosinasi sierica umana (CN1)"

- **Acquired techniques:**
 - Circular Dichroism (CD);
 - Fluorescence Spectroscopy;
 - Liquid Chromatography Mass Spectrometry (LC-MS);
 - Tandem Mass Spectrometry (MS/MS);
 - Enzymatic assay by using Varioscan Flash microplates.

Tutor for the course “Physical chemistry laboratory II” at the University of Catania - Department of Chemical Sciences

Catania| April 2022 - June 2022

- **Topics:** UV-Vis and IR spectroscopy, solutions conductivity measurements, Langmuir-Blodgett film deposition techniques.

Internship at CNR - Cristallography Institute

Catania| June 2019 -July 2019

Thesis Title: “Reazioni di Carbonilazione dell’alfa-sinucleina”

- **Acquired techniques:**
 - Matrix Assisted Laser Deposition/Ionization Time of Flight Mass Spectrometry (MALDI-TOF MS);
 - Tandem Mass Spectrometry (MS/MS);
 - High Performance Liquid Chromatography (HPLC).

C E R T I F I C A T E S

I-PHOQS (Integrate Infrastructure Initiative in Photonic and Quantum Sciences)

School “New Trends in Photonics Application” Catania, Italy | 11 - 15 November 2024

Italian Network for Micro and Nano Fabrication (It-fab)

School on Nanotechnologies, in the Nanoinnovation2023 Conference | 20 - 22 September 2023

CNR - IMM

Prevention and training unit: "Salute e sicurezza nei luoghi di lavoro" | 17 January 2023

University of Catania

Qualification to exercise the profession of Chemist| 17 November 2022

University of Catania

Training course "Salute e sicurezza nei luoghi di lavoro" | 28 February 2022

E D U C A T I O N A N D T R A I N I N G

University of Catania

Master’s degree in Chemical Sciences

Curriculum: Organic and Bioorganic chemistry| 30 September 2022

Vote: 106/110

University of Catania

Bachelor’s degree in Chemical Sciences| 17 April 2020

Liceo scientifico"Ven. Ignazio Capizzi" Bronte (CT)

Scientific High School Diploma| 8 July 2011

I hereby authorize the use of my personal data in accordance to the GDPR 679/16 - "European regulation on the protection of personal data"

Date

26/11/2024

Signature

