

Valerio Stacchini

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Nanomaterials Engineer and PhD in Optoelectronics & Organic Electronics. Looking for a hands-on role as materials expert for payload development and advanced satellite subsystems. Driven to push thin-film and interface engineering beyond the lab into next-generation satellite hardware and the coming era of quantum sensing for space technologies.

CORE TECHNICAL EXPERTISE

Thin-Film Fabrication: Hands-on experience with vacuum deposition, solution processing, and controlled crystallization of semiconductor layers.

Vacuum Technologies: Operation of high and ultra-high vacuum (UHV) systems for thermal evaporation of metal electrodes and solar cell contacts.

Laser Systems & Optoelectronic Characterization: From laser fundamentals to advanced materials analysis (PL, trPL, SPV).

Semiconductor Physics & Interfaces: Deep understanding of charge transport and interfacial energetics in organic and inorganic semiconductors.

Molecular Self-Assembly: Development of self-assembled monolayers (SAMs) on transparent electrodes (e.g., ITO) for interfacial engineering and surface modification.

EXPERIENCE

Helmholtz Zentrum Berlin – PhD Optoelectronics and perovskite solar cells

Berlin, Germany

Project: Molecular Self-assembly in Next-Gen Perovskite Solar Cells

Sept 2022 – Sept 2025

- EU patent application on a novel molecule for interface improvement in perovskite solar cells. Also resulted in a 15% more efficient and non-toxic perovskite solar cells and a first-author paper in Advanced Energy Materials.
- Raised 5M€ in lab instrumentation funding in a collective team effort, including managing in first person €154K of purchases.
- Hands-on expertise in optoelectronic device fabrication and nanosecond laser characterization with a tunable Nd:YAG source.
- Extensive experience on the synthesis and characterization of semiconductor and conductor organic electronic materials.
- Coordinated 75 people in a three-day institute-wide PhD event, including workshops, talks, and team-building sessions.
- Trained and mentored three junior researchers, ensuring onboarding within two weeks (usual time 4 weeks).

King Abdullah University of Science and Technology (KAUST) – Visiting Researcher

Thuwal, Saudi Arabia

Project: Perovskite Single Crystal Solar Cells

Nov 2023 – Feb 2024

- Learned a novel technique for growing single crystal perovskite and successfully transferred it to Berlin laboratories at HZB.

EDUCATION

Politecnico di Milano – MSc and BSc

Milan, Italy

MSc - Nanotechnology and Nanomaterials Engineering

Sept 2019 – July 2022

BSc - Nanotechnology and Nanomaterials Engineering

Sept 2016 – July 2019

- **Relevant coursework:** semiconductor physics, nuclear physics, atomic physics, laser physics, physics of nanostructures, physical chemistry.

Helmholtz Zentrum Berlin & Politecnico di Milano - Master Thesis

Berlin, Germany

Project: Halogen bond-donor amino acid in perovskite solar cells

Sept 2021 – July 2022

- Tested a new molecular treatment for perovskite solar cells interface treatment and developed a deposition protocol for it.

IIT – Italian Institute of Technology & Politecnico di Milano – Bachelor Thesis

Milan, Italy

Project: Ceramic nano-coating for nuclear applications

Feb 2016 – Jun 2016

- Tested protective nano-coatings on zirconium rods for limiting hydrogen evolution under high temperature (like in the Fukushima accident).

Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologia – Erasmus

Lisbon, Portugal

Erasmus Program

Jan 2020 – Jul 2020

SKILLS & INTERESTS

- **Languages:** Fluent in Italian and English; very good Spanish; beginner in Portuguese and German.
- **Extra Technical Tools:** circuit soldering, Python for basic data analysis, Arduino/ESP32 prototyping, can fix almost any coffee machine.
- **Volunteering:** Built houses for earthquake-affected communities in Cañete, Peru; delivered food to families in need during the COVID-19 lockdown in Rome, Italy.
- **Interests:** Sailing is my passion, and the sea is where I feel most at home. I have logged thousands of nautical miles and have participated in a major Mediterranean offshore regatta.