Luca Mondonico

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EDUCATION

Stanford University — Stanford, CA, US

Research Scholar — Zhenan Bao Group at Stanford ChemE — *July 2021 – Feb. 2022*

- Pioneered a solution-processable artificial solid electrolyte interphase for effective anode protection in Li-metal batteries.
- Collaborated on designing and synthesizing fluorinated electrolyte solvents for improved cyclability in Li-ion batteries.

ETH Zürich — Zürich, CH

MSc in Materials Science — GPA: 5.8/6 — *Sep. 2019 – Present*

- MSP Scholarship recipient (granted a $13,000 yearly stipend, 50 scholarships for $\sim$ 5000 students).
- D-MATL Departmental Fellowship (granted a $2,000 quarterly stipend, 1 fellowship for $\sim$ 60 students).
- Interests: Energy storage and conversion, Materials processing and reliability, Polymers, Hybrid nanostructures.

Politecnico di Milano — Milan, IT

BSc in Materials and Nanotechnology Engineering — 110/110 cum laude — *July 2016 – July 2019*

WORK & RESEARCH EXPERIENCE

Tesla, Inc. — Palo Alto, CA, US

Materials Engineer Intern — *Feb. 2022 – Present*

- Developed and tested potting materials for structural battery packs of Model 3, Y, Cybertruck, and Semi. The prototyped materials led to a 3kg mass reduction per car, and $5.2 million saved in materials procurement per quarter.
- Saved up to 500 hours of active test monitoring by designing novel faster testing protocols to evaluate battery materials mechanical compliance in temperature-sensitive scenarios, such as cells thermal runaways and supercharging.

ETH Zürich — Zürich, CH

Research Fellow & Teaching Assistant — *Sep. 2019 – Present*

- Pioneered nanostructured carbon–gold composite battery electrodes for applications in wearable electronic devices. The transparent battery can be stretched up to 50% without losing the electrochemical stability over 120 cycles.
- Initiated a theoretical framework for simulation and modeling of viscoelastic interfaces and their effects in the presence of electromagnetic fields for lightweight design of electronics composites.
- Provided one-on-one instruction for about 25 students in a graduate-level course on transport phenomena.

Nanyang Technological University — Singapore, SG

Research Intern — *July 2018 - Sep. 2018*

- Spearheaded a team of 2 international researchers to the implementation of an experimental model for carbon monoxide adsorption on miniature gas detectors, ultimately reaching a 30% increase in the devices sensitivity.
- Promoted low-cost scalability of 2+ miniaturized biomimetic sensors for ultra-fast detection of disease biomarkers.

EXPO 2017 Astana — Nur-Sultan, KZ

Student Representative at the Italian Pavilion — *July 2017 - Aug. 2017*

- Presented to 20 local organizers a weekly program of 2-hour conferences on the importance of introducing sustainable energy technologies in underdeveloped countries.

Politecnico di Milano — Milan, IT

Student Researcher — *Sep. 2016 - Aug. 2019*

- Collaborated with a team of 4 in investigating novel polymer blends to be used for industrial mechanical joints. The 6-month project resulted in a prototype which was delivered to a $80-million Italian power engineering company.

PROJECTS

Battery manufacturing: Built a gold-nanowire/carbon-nanotube current collector for stretchable thin-film Li-ion batteries.
Sensor: Implemented a luminescent paper-based carbon-nanotube/polythiophene chemiresistive sensor for toxic gases analysis.
Advanced sustainability economics: Proposed an analytical solution for the economic social optimum in the Basic Climate and Pollution Economy (BCE) model, with reflections on the role of population growth in global sustainable development.

EXTRA-CURRICULAR ACHIEVEMENTS

Nano@Stanford — *Volunteer* — *2022*

- Conducted hybrid science outreach demos for sixth graders in rural Colorado and elementary kids in a low resource community in Riverside, CA.

High School Chemistry Workshop — *Founder & Lecturer* — *2016*

- Organised 10+ hands-on experiments for the students, gathering a combined 100+ attendees.
- Petitioned my old school for financial support, generating $\sim$$1200 of funds.

Volleyball — *Team Captain* — Italian National Champion. — *2013, 2015*

SKILLS

IT: SolidWorks, Python, OriginPro, MATLAB, LaTeX.
Technical: SEM, TEM, AFM, FTIR and Raman spectroscopy.
Languages: Italian (Native), English (Proficient).