Luca Mondonico

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WORK & RESEARCH EXPERIENCE

Tesla, Inc.   Palo Alto, CA, US
Cell Engineer Intern   *Mar. 2023 – July 2023*
- Led 3 internal cell qualification programs, coordinating 100+ testing protocols with multiple labs and external vendors.
- Developed an internal tool used by 50+ employees, resulting in a 90% reduction of cell qualification test planning/validation time.

Materials Engineer Intern   *Feb. 2022 – Dec. 2022*
- Developed and tested potting materials for battery packs of Model 3, Y, Cybertruck, and Semi. The prototype 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.

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
Research Fellow & Teaching Assistant   *Sep. 2019 – June 2021*
- 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.
- 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 3 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   *June 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.

EDUCATION

Stanford University   Stanford, CA, US
Ph.D. candidate in Materials Science and Engineering; Minor in Computer Science   *Sep. 2023 – Present*
- 2024 Chevron Fellowship in Energy

ETH Zürich   Zürich, CH
MSc in Materials Science, with distinction   *Sep. 2019 – July 2023*
- 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).

Politecnico di Milano   Milan, IT
BSc in Materials and Nanotechnology Engineering — 110/110 cum laude   *July 2016 – July 2019*

CURRENT PROJECT

"Hierarchical Moiety-Aware Graph Transformer for Li-metal Electrolyte Formulation Design", *ChemRxiv, 2025*

Developed HELENA, a novel graph transformer that encodes moiety-level chemistry using hierarchical attention mechanisms, achieving >99.6% Coulombic efficiency in experimentally validated predictions

EXTRA-CURRICULAR ACHIEVEMENTS

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

SKILLS

Technical: Python (PyTorch, PyTorch Geometric), GNNs, Molecular Representation Learning, Molecular regression, SQL, SolidWorks.

Languages: Italian (Native), English (Proficient).