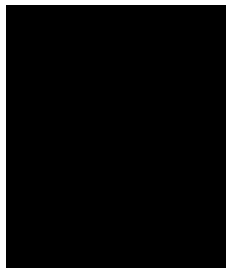


Personal information



Papurello Davide

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✉ davide.papurello@polito.it

Sex m | Date of birth [REDACTED] | Italian nationality

Education:

Ph.D. in Energy Engineering (2011-2014) – Politecnico di Torino

M.Sc. in Energy Engineering (2007-2009) – Politecnico di Torino

B.Sc. in Energy and Nuclear Engineering (2003-2007) – Politecnico di Torino

Professional Experience:

Politecnico di Torino

Associate Professor (2025-present)

Leads research on reliability and fire safety of lithium-ion batteries and operational safety of renewable systems. Teaches master-level courses in Energy Systems Laboratory, *Energy Storage Technologies* and *New Battery Systems for Mobility*. He also leads the PhD course in Ventilation and Tunnel Safety (in collaboration with TUG-Graz, delivered entirely online).

Tenure-Track Assistant Professor (2022-2025)

Lead research projects on waste-to-energy and hydrogen production, including PRIN2020, BatFire, and BioWaste for SOFC. Holder of Master's and Doctoral courses in energy engineering.

Assistant Professor (RTD-a) (2018-2021)

Worked on various research projects, including Waste2Watts, THERMODEL BAT, and Brisk II. Contributed to courses and supervised several Master's and Bachelor's theses.

Postdoctoral Researcher (2014-2018)

Collaborated on projects such as SOFCOM, DEMOSOFC, and DBOSOFC. Focus on biogas and hydrogen research for energy applications.

Fondazione Edmund Mach, Italy

Research Fellow (2011-2013)

Managed the VEGA project on biogas utilization for fuel cells.

Michelin (Cuneo, Italy)

Postgraduate Internship (2010)

Worked on maintenance engineering projects.

Selected Research Projects:

Advancing research on electrochemical energy storage systems through a Tri-University collaboration (ARES-APW) (Unite! call)

Concentrated Solar Power and Solar cells – Innovative materials and technologies (CSP-IMT), sustainable

electricity and heat generation - Training and Innovation (Unite! call)

HYWAY: Hydrogen Production from Waste (Co-funded by the European Union, Engineering and physical sciences research council – UKRI)

PRIN2020: Hydrogen production, storage, and CO₂ enhancement in renewable energy networks.

BatFire (2023-2024): Safety and fire testing of electric vehicles. (Unite! call)

Waste2Watts (2018-2021): Integrated biogas-SOFC system design and testing. (European funds)

BioWaste for SOFC (2015-2017): Biogas purification for SOFC systems.

THERMODEL BAT: Thermal modeling to predict battery aging in electric vehicles.

VEGA and BWS projects funded by Caritro (Trento) in collaboration with Fondazione Edmund Mach and Solidpower spa.

Teaching Experience:

Master's and Bachelor's Degree Courses:

- Energy Storage Technologies, New Battery Systems for Mobility (Course collaborator since 2022 - present).
- Laboratory of Energy Plants (LIE): Full course management and experimental activities (Course holder since 2020 - present).
- Applied Thermodynamics and Heat Transmission (Course collaborator since 2018 - present).
- Design of Thermotechnical Systems (Course collaborator since 2023 - present).
- Thermotechnical Systems and Industrial Refrigeration (Course collaborator since 2024 - present).
- Instructor for the technical training of three operators at the Livorno Ferraris (VC) thermoelectric power plant, delivering a 90-hour course (in-person and online) on applied thermodynamics, physics, basic electricity, combustion chemistry, and water treatment in power plants (three separate yearly sessions).

International Collaboration and Initiatives:

- Tunnel Ventilation and Safety (Graz University of Technology, March 23).
- Co-organizer of international program: Joint Online Course on Safety Tunnel and Ventilation systems (TU Graz and PoliTo) (March 24, March 25, March 26).
- Co-organizer of international program: Summer school program on Safety of Underground Transport Infrastructure in collaboration with international universities (TU Darmstadt, TU Graz, WUST Wroclaw) – (Sept 24, Sept 25).
- Coordinator of international program: Hybrid course (online-onsite) HSMA- Hydrogen and Safety for Mobile Application (1st edition) in collaboration with international universities (UPC Barcelona, TU Graz) – (Sept. 25).
- Visiting professor in charge of the 45-hour Experimental Studies of RES course in Astana (KZ) at Gumilev Eurasian National University (ENU) (Oct 24).
- Member of the TC4.4 – PIARC – tunnel safety, cycle 2020-2023 and 2024-2027.
- Visiting professor - Experimental research at the Aberdeen research laboratory (HyWay project) (August 2025) - experimental tests to produce hydrogen and solid char useful for enriching the PCM system for thermal control of LIB batteries. Char produced from organic waste digestates and water treatment sludge.
- Participated in the Virtual Battery Project Proposal Workshop, Coventry University, 29–31 October 2025.

Test Bench & Laboratory Responsibilities:

Developed test benches for biogas purification, battery testing (LIB), and geothermal heat pumps. Supervised the construction of CO₂ removal systems using polymeric membranes and ionic liquids. Supervising the Test bench about the Solar concentrator system at the Energy Center rooftop.

Conference Presentations:

Hydrogen Energy Summit & Expo (2023) - Presented on safety and regulations for hydrogen-fueled vehicles.

AIGE IETA Conference (2023), Delivered insights on battery state-of-charge and thermal gradients in solar concentrators.

12th International Tunnel Safety and Ventilation Conference (2024) - Presentation on fire testing of lithium-ion batteries.

32nd Joint Annual Conference of the Chinese Society of Chemical Science and Technology in the UK and the Society of Chemical Industry (The 32nd CSCST-SCI) – August 25 Aberdeen – Invited speaker - Experimental Investigation of EPCM and Boron Nitride Additives for Safety Enhancement in Lithium-Ion Batteries

Conference Invitation: Seventh International Symposium on New and Renewable Energies, Ghardaia (Algeria), 15–16 October 2025 — Talk: High-Temperature Materials for CSP Receivers: Experimental Insights and Material Selection Challenges.

Invitation speech to the online conference “The 4th International Electronic Conference on Processes: New Energy Vectors for Transport – A Safety-Focused Look at EVs and Hydrogen Vehicles. (22/10/2025)”

The 1st International Online Conference on Designs Energy Systems and Artificial Intelligence, BEV, electric vehicles safety issues - thermal runaway and abuse testing in confined spaces, 9-10 febbraio 2026.

13th International Conference Tunnel Safety and Ventilation, Graz (Austria), Experimental Investigation of Thermal Runaway in Lithium-Ion Batteries: Implications for Tunnel Safety and Structural Integrity. 21-23 April 2026.

Selected Publications:

Sulfur poisoning in Ni-anode solid oxide fuel cells (Chemical Engineering Journal, 2016) – 153 citations.

Biogas trace compounds impact on high-temperature fuel cells short stack performance (International Journal of Hydrogen Energy, 2021) – 45 citations.

Calibration methodology of static, dynamic and ageing parameters of an electrochemical model for a Li-ion cell based on an experimental approach (Renewable Energy, 2025) – 7 citations.

Solar Thermochemical Fuel Production: A Novel, Validated Multiphysics Reactor Model for the Reduction–Oxidation of Nonstoichiometric Redox Cycles (Energies, 2025) – 2 citations.

Thermal runaway in lithium-ion batteries: experimental insights from mechanical, thermal, and electrical stress tests (Applied Thermal Engineering, 2025) – 4 citations.

Impact of phase change material-based thermal management on battery thermal safety (Applied Thermal Engineering, 2026)

Experimental Approach of Thermal Management Properties for Phase Change Materials in Energy Storage Modules at Different Power Loading (Energy Storage, 2026)

Waste-to-Hydrogen pathways: Gas composition and char structure evolution during pyrolysis of food and digestate waste (International Journal of Hydrogen Energy, 2026) - 1 citation

Advances in micro-and nano-encapsulated phase change materials for solar water applications: A comprehensive review of technological progress and future research directions (Journal of Energy Storage, 2026) - 8 citations

The Impact of New Energy Carriers in Road Tunnels, Part I: Focus on Battery Electric Vehicles (Fire Technology, 2026) - 1 citation

Honors and Awards:

Listed in Stanford University's top 2% of Scientists (2022, 2023, 2024).

Winner of multiple academic prizes, including the Mario Ornelli Prize (2010) for renewable energy development.

Professional Memberships:

Member of the Italian Technical Physics Association and the Energy Center Lab.

Editorial roles at MDPI (Processes, Gases, Fuels), Frontiers in Synfuels, and Fuel Cells Electrolyzers.

Reviewers of Elsevier's and mdpi's journals.

Reviewer of research projects at the National Science Centre, Krakow, four editions, expert scientific reviewer.

Reviewer of National Center of Science and Technology evaluation (NCSTE).

Member of the WG4.4 Road Tunnel PIARC (2021-2024, 2024-2027).

Bibliometric indexes

h-index

35

No. Citations

2928

Total number of publications in peer-reviewed journals

82

I authorize the processing of personal data contained in my curriculum vitae based on art. 13 of Legislative Decree 196/2003.