

Empa PhD Symposium 2025

Program Schedule

Feb 27th 2025

Empa Akademie (Dübendorf)



**Empa PhD
Symposium 2025**

"Illuminating the world"

*Driving industry innovation
through impactful research*

08:00 – 08:30	Registration and coffee	
08:30 – 08:45	Tanja Zimmermann	<i>Opening</i>
08:45 – 09:00	Melina Spycher	<i>Diversity and Inclusion</i>
09:00 – 09:30	Keynote speaker: Prof. Dr. André Studart (ETHZ)	<i>Evolving Bacteria to Make Materials</i>
	Student Presentations	
09:30 – 09:50	Hendrik Jansen	<i>Tailored Nanocrystalline Aluminium Grain Size in a Nanolaminated Architecture: New Horizons</i>
09:50 – 10:10	Somashree Mondal	<i>Shape-morphing ferrimagnetic soft robots</i>
10:10 – 11:15	First Poster Session (A) and Coffee	
11:15 – 11:45	Keynote speaker: Prof. Dr. Anna Fontcuberta I Morral (EPFL)	<i>The joys and impact of research in materials science: a perspective from the semiconductor domain</i>
	Student Presentations	
11:45 – 12:05	Fabian Weyand	<i>Large-Scale Inkjet Printing of Graphene-Based Electrochemical Sensors</i>
12:05 – 12:25	Luis Mauricio Ortiz-Galvez	<i>Prospective material flow analysis and life cycle releases of graphene: enlightening a circular economy context for advanced materials in Europe</i>
12:25 – 13:30	Lunch Break	
13:30 – 13:50	Invited speaker: Natanael Lanz (Chiral Nano AG)	<i>How academic research led to Chiral Nano AG</i>
	Student Presentations	
13:50 – 14:10	Sandro Meier	<i>A first glimpse at the quantification of anthropogenic CH₄ emissions in Europe with the Airborne Visible InfraRed Imaging Spectrometer AVIRIS-4</i>
14:10 – 14:30	Julia Achatz	<i>An Explainable Segmentation Decision Tree Model for Enhanced Decision Support in Roundwood Sorting</i>
14:30 – 14:50	Industry talk: Olivier Enger (BASF)	<i>A Journey towards Net Zero and Circularity</i>
	Student Presentations	
14:50 – 15:10	Marine de Lapeyrière	<i>Development of granular scaffolds from porous microgels for the treatment of skin burn wounds</i>
15:10 – 15:30	Kiarash Tajbakhsh	<i>Thyroid neoplasm pathology from micro anatomy to molecular signatures using X-ray imaging</i>
15:30 – 16:30	Second Poster Session (B) and Coffee	
16:30 – 16:50	Industry talk: Norbert Mayr (Metrohm)	<i>Research meets industry - A partnership for innovation</i>
	Student Presentations	
16:50 – 17:10	Hugo Braun	<i>Stable 4 V-class All-Solid-State Lithium Battery with Hydroborate Electrolyte and NMC811 Cathode</i>
17:10 – 17:30	Jiuke Chen	<i>Combined Computational and Experimental Study of Thermal Decomposition of Phosphorus Flame-retardants</i>
17:30 – 17:50	Industry talk: Raffael Kellner (VentureLab/ Venturekick)	<i>From science to startup: best practices on grants, venture capital, product launch, and scaling internationally</i>
17:50 – 18:30	Awards and Closing Ceremony	
18:30 – 19:00	Apero	
19:00 – 23:00	Dinner (The Pavilion)	

First Poster Session A (10:10 – 11:15)

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Serial Number	Name	Title
A1	Meruyert Alisher	<i>Effect of carbonates on the precipitation of iron hydroxide</i>
A2	Clelia Bouchaud-Deliot	<i>Effect of sodium orthophosphate on the rheology and early kinetics of a Mg carbonate cement</i>
A3	Rachele Butti	<i>Enhancing the Understanding of Gold Nanoparticle Formation in Ionic Liquids through Variable Temperature In Situ Liquid Phase Scanning Transmission Electron Microscopy</i>
A4	Arthittaya Chuaybamrung	<i>Development of Grafted Natural Rubbers Latex Carbon Nanotube Composites and their Mechanical and Electrical Properties</i>
A5	Ramzi Dakhmouche	<i>Long-range predictions for Energy Systems</i>
A6	Lorenzo J. A. Ferraresi	<i>Thin Film Photodetectors for Time-Resolved Applications</i>
A7	Marco Finger	<i>Graphene Nanoribbons as Atomically Precise Light Emitters</i>
A8	Ali Jafarabadi	<i>Self-Locking Fe-Based Shape Memory Joints</i>
A9	Danyang Jiang	<i>Reconciling plastic release: Comprehensive modeling of macro- and microplastic flows to the environment</i>
A10	Soumaya Khiari	<i>Effect of carbonates on the solubility of lepidocrocite</i>
A11	Raphael Kuhn	<i>Sodium hexametaphosphate as superplasticizer for MgO-silicate cement stabilized clays</i>
A12	Xuanchen Li	<i>Graphene nanoribbons as a quantum platform</i>
A13	Matteo De Marzi	<i>Enhancing the external quantum efficiency response under rear illumination in Bifacial CIGS Solar Cells</i>
A14	Chiara Menegus	<i>Effect of Hydrogen on the passivity of steels by a surface analytical approach</i>
A15	Camilla Minzoni	<i>Reaction Pathway of Copper ALD via Time-of-Flight Mass Spectrometry</i>
A16	Veronica Montanaro	<i>Fokker-Planck model for non-equilibrium fluid dynamics</i>
A17	Manon Murdeu	<i>Human-based placenta-embryo chip for developmental toxicity assessment of nanoparticles and drugs</i>
A18	Jorge Sanchez	<i>Phase behaviour of Cellulose nanocrystals doped with melanin and polydopamine</i>
A19	Suyash Singh	<i>Tuning the Exchange Interactions in Triangulene-based Spin Platforms</i>
A20	Jacopo Sorani	<i>Redefining Drug Innovation: How to Integrate the Safe and Sustainable by Design (SSbD) Framework to the Pharmaceuticals and Nanomedicines Sector</i>
A21	Noé Stauffer	<i>Dynamic optimal model reduction</i>
A22	Akshat Sudheshwar	<i>Approaches to Facilitate Environmentally Safe and Sustainable Decision-Making</i>
A23	Francesco Taddei	<i>Influence of partial curing on residual stress and process time in Additive Manufacturing of thick thermosetting composites</i>
A24	Umut Taylan	<i>Fabrication of Sub-10 μm Size Asymmetric Microstructures by Mask Projection Laser Ablation with Gray Level Transmission Intensities</i>
A25	Alex Weitnauer	<i>Airborne mid-infrared spectroscopy for in-situ water vapor isotope measurements in the upper atmosphere</i>
A26	Valeria Zanrè	<i>Influence of osteoporosis and COVID-19 on bone microscale properties: A Raman spectroscopy and nanoindentation study</i>
A27	Cansu Zeytun Karaman	<i>Ethylsulfone-containing polysiloxanes for dielectric elastomer actuators</i>
A28	Wolfgang Jan Zucha	<i>Effect of magnesium-based cementitious binder on smectite for earth construction</i>

Second Poster Session B (15:30 – 16:30)

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Serial Number	Name	Title
B1	Raluca-Ana-Maria Barna	<i>The Ligamentum Flavum's Role in Spine Degeneration and Aging</i>
B2	Martina Birocco	<i>Investigating humidity-driven variations in fracture toughness of alumina via microcantilever testing and Gaussian regression</i>
B3	Sofiia Butenko	<i>3D-printed composites with aligned 1D lead-free piezoelectric ceramic fillers for soft self-powered tactile sensors for soft grippers</i>
B4	Vahid Charkhesht	<i>The Effect of Graphene on Fast Charging and Discharging Performance of LFP in Li-Ion-Based Supercapacitors</i>
B5	Shungui Deng	<i>Insights into the Overcharge-Induced Failure Mechanism of Lithium-Sulfur Batteries</i>
B6	João Pedro Ferreira Assunção	<i>Squaraine dye based organic photomultiplication diodes with 220% external quantum efficiency at 1240 nm</i>
B7	Corentin Foucher	<i>Multiscale investigation of impact mitigation strategies: Biomimicking musk ox head</i>
B8	Stefanie Frick	<i>Accelerating the development of oxynitride coatings using combinatorial magnetron sputtering</i>
B9	Sebastian Habermann	<i>Cathodoluminescent and Characteristic X-ray-emissive Rare-Earth-doped Core/Shell Protein Labels for Spectromicroscopic Analysis of Cell Surface Receptors</i>
B10	Mohammad Jafarpour	<i>Impact of Cavity Parameters on Gravure Printing for Printed Electronics</i>
B11	Tino Adrian Jucker	<i>Clinical evaluation of an innovative air mattress for neonatal pressure ulcer prevention</i>
B12	Matthias Klimpel	<i>Unveiling Surface Chemistry of Ultrafast-Sintered LLZO Solid-State Electrolytes for High-Performance Li-Garnet Solid-State Batteries</i>
B13	Léo Lapeyre	<i>Exploring Early-Stage Growth Dynamics of LiNbO₃ by ALD on NMC 811 Cathodes: an In Situ QCM Analysis for Artificial SEI Applications</i>
B14	Jincheng Luo	<i>Scalable Coating of Wide-Bandgap Perovskites on Flexible Substrates for Photovoltaic Application</i>
B15	Philipp Meier	<i>Safety and sustainability assessment of antiviral, antibacterial and antifungal nanocoatings applied on porous- and non-porous surfaces</i>
B16	Ceren Mitmit	<i>Semi-transparent Wide-Bandgap ACIGS Solar Cells by Low Temperature Processes</i>
B17	Vittorio Montanelli	<i>Microstructural Studies of Thin Film All-Solid-State Batteries by S/TEM</i>
B18	Saketh Ravuri	<i>Nanographene based building blocks for tailoring magnetic phases</i>
B19	Sina Ruhstaller	<i>Prenatal origin of allergies: Can early-life environmental co-exposures to micro-/nanoplastics and allergens induce immune changes at the maternal/placental-fetal interface?</i>
B20	Hauke Schlesier	<i>Recycling fossil infrastructure for greener energy transitions</i>
B21	Katharina Sribike	<i>A dynamic dECM-based hydrogel for in vitro tissue models</i>
B22	Dan Stefanita	<i>Improving local antibiotic therapy through the study of interactions and release mechanisms between CaSO₄ carriers and antibiotics</i>
B23	Xue Sun	<i>Translating Planetary Boundaries into Material-Level Life Cycle Assessments</i>
B24	Nikolaos Tagaras	<i>A nanomedicine challenge under the radar: a case study of Mn@PCN224 nanozyme biotransformation</i>
B25	Elisabeth Tobler	<i>Optimizing fresh fruit Supply Chains with Digital Twins</i>
B26	Ziting Wang	<i>Silicon carbide nanowires affect respiratory epithelial cell-mediated innate immune defense by impairing mucociliary functions</i>
B27	Erfu Wu	<i>A CMOS-Compatible Fabrication Approach for High-performance Perovskite Photodetector Arrays</i>
B28	Yiwen Zhang	<i>Using a Dynamic Probabilistic Material Flow Analysis Approach to Capture Japanese Plastic Flows</i>
B29	Zeyu Zhou	<i>Effect of aluminium on the hydration and strength of MgO-nesquehonite Binders</i>