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Adopting Sustainable Partnerships for Innovative Research Ecosystem

53th Kageyama Lab Seminar

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**Electrochemical liquid-phase transmission
electron microscopy for real-time
electrocatalytic studies**



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Abstract

Materials used in energy react to electrical stimuli in diverse ways. In this talk, I will discuss our efforts in developing in-situ liquid phase electron microscopy (EM) methodologies, correlating them with cryo EM and applying them to investigate the mechano-physico-chemical properties of the materials' response to applied voltages in mixed media. In particular, I will review the insights that liquid-phase TEM can provide for the study of catalyst particles for the CO₂ reduction reaction (CO₂RR), the oxygen reduction reaction (ORR), and the oxygen evolution reaction (OER).

Biography

Vasiliki Tileli received her PhD in materials science from the State University of New York in the USA working on development of statistical, quantitative models of electromagnetic signals in environmental conditions of electron microscopes. She then completed her Marie Curie Individual Fellowship at Imperial College London before moving to the Institute of Materials at EPFL where she is now an Associate Professor. With her group, they study on a fundamental level the nanoscale properties of functional materials using in-situ electron microscopy techniques.