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4TU.HTM

Joint 4TU.HTM Workshop

Advanced in-situ methods for materials characterization

De Witte Vosch (Oudegracht 46, Utrecht), Friday 29 November 2024

Confirmed invited speakers

- Marnix Wagemaker (TUD)
- Beatriz Noheda (RUG)
- Petra de Jongh (UU)
- Chris Baeumer (UT)
- Wiebke Albrecht (Amolf)

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Scope of the workshop

Structural characterization of materials down to the atomic scale is essential for understanding properties and performances of materials. The holy grail is to perform at the same time advanced structural and property characterization under realistic dynamic conditions. Recent technological advancements now allow us approaching this holy grail.

In the present (afternoon) workshop the main focus is on the use of structural probes based on electrons, X-rays (lab-based or synchrotron) and neutrons and then perform in-situ or operando dynamical experiments. This for instance allows atomic resolution imaging of nanoscale electronic devices subjected to electrical fields, light driven processes monitored inside the electron microscope, nanoscale catalysts interacting with gases and liquids and operando studies of battery materials.



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Full Programme

12.00	Walk-in and lunch
12.50 - 13.00	Welcome & introduction Arjan Mol , Scientific Director 4TU.HTM, TU Delft (ME, MSE)
	Chair: <u>Bart Kooi (RUG)</u>
13.00 – 13.25 (20 + 5 min)	Marnix Wagemaker – Delft University of Technology <i>Guiding next generation battery material design through operando characterizations</i>
13.25 – 13.40 (12 + 3 min)	Yuqiang Yang – University of Groningen <i>Enhancing the Performance of NMC811 Cathode Materials through Surface Coating and Probed by Advanced Characterization Techniques</i>
13.40 – 14.05 (20 + 5 min)	Petra de Jongh – Utrecht University <i>Observing nanoparticulate catalysts at work</i>
14.05 – 14.20 (12 + 3 min)	Khatereh Roohi – Delft University of Technology <i>Rational Design of Cu-MOF Electrocatalysts for CO₂ Reduction: A Pathway to Selective CO/Formate Production via in situ Raman Spectroscopy</i>
14.20 – 14.35 (12 + 3 min)	Stan Looijmans – Eindhoven University of Technology <i>Deformation kinetics of single-fiber polypropylene composites: adhesion improvement at the expense of toughness</i>
14.35 – 15.00	Break
	Chair: <u>Gertjan Koster (UT)</u>
15.00 – 15.25 (20 + 5 min)	Beatriz Noheda – University of Groningen <i>The many phases of Hafnia under the microscope</i>
15.25 – 15.40 (12 + 3 min)	Sundar Raj Krishnaswamy – University of Groningen <i>Monitoring self-assembly of supramolecular nanotubes in real time</i>
15.40 – 16.05 (20 + 5 min)	Wiebke Albrecht – Amolf, Amsterdam <i>Engineering of plasmonic gold nanocrystals through combined pulsed laser excitation and electron microscopy</i>
16.05 – 16.30 (20 + 5 min)	Chris Baeumer – University of Twente <i>In situ characterization of electrocatalysts for green hydrogen</i>
16.30	Closure, drinks & bites