

WORKSHOP

Novel (2D) Materials and Their Applications

February 17-18, 2025

Super C | RWTH Aachen University
Aachen, Germany

Monday, February 17, 2025

12:00 - 13:00 Registration & Lunch

13:00 – 13:15 **Max Lemme** (RWTH & AMO GmbH)
Opening

Beyond graphene

13:15 – 13:45 **Alessandro Molle** (CNR-IMM)
Nanoscale Engineering of Two-Dimensional Single Element Crystals (Xenes)

13:45 – 14:15 **Pantelis Bampoulis** (University of Twente)
Quantum Spin Hall States and Topological Phase Transition in Germanene and Germanene Nanoribbons

14:15 – 14:45 **Cezar Zota** (IBM - Zürich)
Topological Weyl and chiral semimetals: Physics and Applications

14:45 – 15:15 **Zdenek Sofer** (UCT Prague)
Novel magnetic and dielectric 2D materials

15:15 – 15:30 **Athanasios Dimoulas** (NCRS Demokritos)
Engineering of new 2D phases based on liquid metal catalyst

15:30 – 16:00 **Coffee Break**

Advanced Characterization Methods for 2D Materials

16:00 – 16:15 **Inge Asselberghs** (imec)
Introducing the 2D-Pilot Line

hybrid session
streamed by: 

16:15 – 16:45 **Abbas Mohtashami** (TNO)
Scanning Nitrogen-Vacancy Microscopy: A developing tool for characterization of 2D material devices

16:45– 17:15 **Gertjan van Baarle** (Leiden Probe Microscopy)
Development of in-situ tools for characterization and manipulation of 2D materials during and after growth on liquid metal catalysts by CVD

17:15 – 17:45 **Paulo Ferreira** (INL)
Understanding the Structure of 2D and 3D Dirac Materials by Electron Microscopy

17:45 – 18:00 **Valentina Rein** (ESRF)
In Situ Synchrotron Methods for Surface-Sensitive Studies of 2D Material Growth

18:00 – 18:15 **Harm Knoops** (Oxford Instruments)
Atomic Layer Deposition and Etching for Devices using 2D Materials

18:15 – 20:30 **Poster session & Dinner**

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Tailoring materials and devices for future applications

- 09:00 – 09:30 **Hendrik Heenen** (Fritz Haber Institute)
Understanding 2D Material Growth at Liquid Metal Catalysts using Atomistic Simulations
- 09:30 – 10:00 **Alexei Nazarov** (LISP -NAS Kyiv)
RF plasma modification of nanoscaled materials and structures
- 10:00 – 10:30 **Pedro Barquina** (UNINOVA)
Flexible oxide TFTs for IoT: opportunities and challenges
- 10:30 – 11:00 **Kai Brinkmann** (Bergische Universität Wuppertal)
Powering IoT with photovoltaics - the path to high operation voltages
- 11:00 – 11:30 **Coffee Break**

Towards attojoule switching

- 11:30 – 12:00 **Lars-Erik Wernersson** (University of Lund)
Steep-slope devices: Status and perspective
- 12:00 – 12:15 **Dennis Lin** (imec)
Towards Wafer-scale MX2 Device Pathfinder Platform: Lab and Fab Development
- 12:15 – 12:45 **David Esseni** (Università di Udine)
Dirac source FETs: essential physics and implementations based on 2D materials
- 12:45 – 13:15 **Aryan Afzalian** (imec)
Steep-Slope switching opportunities and challenges with low-dimensional materials: A first-principles quantum transport study
- 13:15 – 14:00 **Closing & Lunch**

The workshop is organized by the Aachen Graphene & 2D Materials Center, RWTH Aachen University and AMO GmbH with the financial support of the EU through the projects 2D-ENGINE, 2D-PL, Attoswitch and FOXES and of Oxford Instruments Plasma Technology.

