

20 Years of MIN Faculty - Symposium

Friday 10 October 2025 - Friday 10 October 2025

Scientific Programme

Plenary session

09.00-09.10 Welcome address by Prof. Dr.-Ing. Norbert Ritter

09.15-10.00 General introduction + three short keynotes

09.15-09.30 Kai Jensen: Life - Earth - Climate

10.00-10.30 Coffee break

Parallel sessions I

10.30-12.00 Three parallel sessions for the three future themes; six short talks each (90 min) or three short talks and then interactive format (each 45 min)

12.00-13.15 Lunch break

Poster presentations (incl. coffee)

13.15-14.45 Poster session(s) for the three future themes

Parallel sessions II

15.00-16.30 Three parallel sessions for the three future themes; six short talks each (90 min) or short talks and interactive format (each 45 min) or only interactive format (90 min)

16.30-17.00 Uhr Coffee break

Plenary session

17.00-18.00 Synthesis and outlook from the parallel sessions

18.00 Get together

MIN Life Science

This symposium will highlight the pivotal role of the life sciences across the MIN faculty in advancing our understanding of complex biological systems and addressing global challenges. It brings together researchers to discuss innovative approaches and recent breakthroughs across various disciplines within the life sciences. Special emphasis will be placed on two critical sub-themes: 'Integrative Infection Biology' and 'Ecology, Environment, and Climate'. PIs from the MIN faculty will present their perspectives on these themes and showcase current research, illustrating how interdisciplinary approaches can deepen our understanding of complex systems, such as host-pathogen interactions and ecological dynamics. The 'Integrative Infection Biology' session explores the intricacies of infection and immunity, emphasizing the importance of interdisciplinary strategies in disease prevention, control, and the development of novel therapeutics. The session on 'Ecology, Environment, and Climate' highlights the dynamic relationships between ecological systems, environmental changes, and climate dynamics, demonstrating how integrative research can inform sustainable solutions for environmental protection and climate resilience. Through short talks, discussions, and a poster session, the symposium aims to foster new collaborations, knowledge exchange, and the development of innovative research paradigms. By emphasizing the interconnectedness of health, environment,

and climate, this event seeks to inspire new approaches that address pressing scientific and societal challenges, in the Life Sciences and beyond.

MIN Materials of the Future

The symposium aims to foster interdisciplinary dialogue among researchers within MIN and related fields, with a specific emphasis on material-focused research. The event will explore how principles from living systems can inspire innovative material design, while addressing advanced fabrication techniques, material characterization methods, and computational models that simulate material behavior across multiple scales. A central question we will examine is: How do different scientific disciplines define “material,” and how can we integrate circular and sustainable concepts such as design for recyclability and life-cycle thinking? By identifying synergies across disciplines, tackling current challenges, and outlining future directions, this symposium seeks to advance the frontiers of cross-scale materials science at the MIN faculty of the UHH.

MIN Quantum Science and Technologies

This symposium brings together MIN researchers across all facets of quantum science to foster an open, interdisciplinary exchange. It will present cutting edge work in three intertwined areas:

1. Quantum Technologies
2. Quantum Matter&Materials
3. Quantum Mathematics&Fundamentals

highlighting both theoretical breakthroughs and practical innovations.

In the Quantum Technologies part, speakers will present advances in scalable quantum algorithms, software frameworks and hardware platforms spanning superconducting circuits, trapped ions and solid state devices. Contributions will explore how these technologies drive progress in scientific computing, artificial intelligence and emerging deep tech ventures, and will examine pathways toward robust, high performance quantum systems.

The Quantum Matter & Materials segment will survey engineered many body systems such as ultracold atomic gases in optical lattices, as well as novel two dimensional and moiré heterostructures. Contributions will explore topological phases, correlated electronic materials and molecular quantum systems, addressing both fundamental properties and potential applications in opto electronics and sensing.

Focusing on Quantum Mathematics & Fundamentals, we will highlight universal mathematical frameworks inspired by quantum field theory and string theory. Contributions will illustrate how algebraic, geometric and computational structures emerge from quantum models and how these insights can build bridges between abstract theory and concrete implementations in computer science and beyond.

Participants will explore how these three themes interconnect, uncovering universal principles that transcend disciplinary boundaries. Our aim is to spark new collaborations, drive forward both fundamental research and technology driven innovation, and chart a shared vision for the future of quantum science within the MIN faculty.