Seminar/Talk

Nanofluidics and the power of interfaces: new perspectives for energy conversion

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Host: Baptiste Coquinot (RG Lemeshko)

Nanofluidics studies the behavior of fluids confined at the nanometer scale, where interfaces dominate transport and give rise to phenomena absent at larger scales. Beyond its fundamental interest, this field offers promising perspectives for applications such as water desalination and energy harvesting.In this seminar, I will discuss how nanoscale confinement modifies fluid transport through the emergence of characteristic interfacial length scales, with a particular focus on the so-called slip length, related to liquidsolid friction. I will show how the nature of the solid surface (such as roughness or mechanical and electronic fluctuations) can strongly affect transport properties. Finally, I will present recent insights into the impact of charge fluctuations at interfaces on liquidsolid friction and transport, and how these effects can be investigated using theory and molecular dynamics simulations opening the path to experiments. These phenomena open new possibilities for coupling hydrodynamic and electrostatic effects, with potential applications to the conversion of osmotic energy into electrical power.

Thursday, June 18, 2026 11:00am - 12:00pm
Office Bldg West / Ground floor / Heinzel Seminar Room (I21.EG.101)

This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: https://ista.ac.at/en/campus/how-to-get-here/ The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.