



EINLADUNG

zum Vortrag
von

Dr. Peter van Oostrum

ICBS, NWNr, BOKU University, Wien

Colloids through the lens of lensless in-line holographic microscopy

am Dienstag, 25. November 2025, um 17:30 Uhr

Ort: Lise-Meitner-Hörsaal, Fakultät für Physik, Universität Wien,
1090 Wien, Strudlhofgasse 4 / Boltzmannngasse 5, 1. Stock

*Barrierefreier Zugang: Boltzmannngasse 5, Lift, 1. Stock rechts über den Gang zum
Hintereingang des Hörsaals*

Abstract:

Colloids are systems in which a material is finely dispersed in another one. Examples are: paint, toothpaste, smoke, drinking water, sewage, cell cultures and blood. The dispersed objects interact via various forces, such as van der Waals attractions and charge interactions and may be actively swimming: all this leads to collective phenomena such as rapid phase transitions. We look at that with in-line holographic microscopy. Here, monochromatic light is scattered by dispersed particles or microorganisms. The scattered light interferes with the ballistic part of the illumination, forming holograms. We introduce a family of interference contrasts and a thresholding scheme that boost both the signal-to-noise ratio and resolution allowing the swift detection and characterization of thousands of individual objects in large volumes of liquid. This gives access to colloidal interactions in great detail and enables the monitoring of real world problems such as food hygiene and processes in bioreactors. To make the latter possible at scale we founded a startup company.

CHEMISCH-PHYSIKALISCHE GESELLSCHAFT

c/o Universität Wien, Fakultät für Physik, 1090 Wien, Boltzmannngasse 5, Austria

Generalsekretär: Christl Langstadlinger

Tel.: +43-(0)1-4277/51108 - Mobil: 0664-8175146

E-Mail: christl.langstadlinger@univie.ac.at - <http://www.cpg.univie.ac.at>

ZVR-Zahl: 513907440

Konto: Bank Austria - IBAN: AT22 1100 0086 4440 8000 - BIC: BKAUATWW