

Seminar

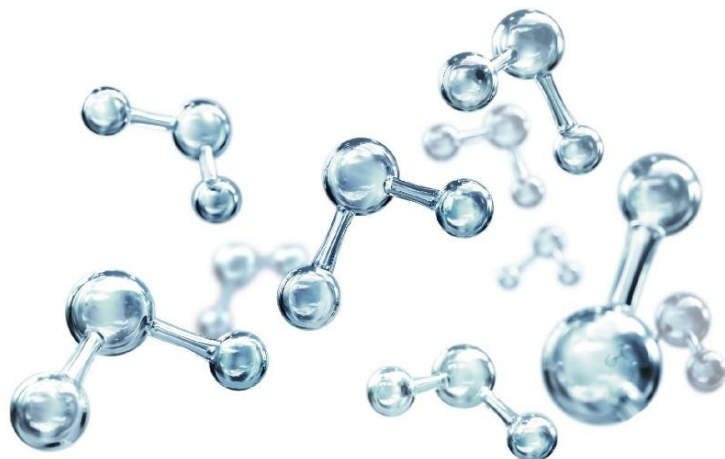
16th of May 2024
12:00 h

Zoom Virtual Meeting:

<https://tuhh.zoom.us/j/82631283465>

Meeting-ID: 826 3128 3465

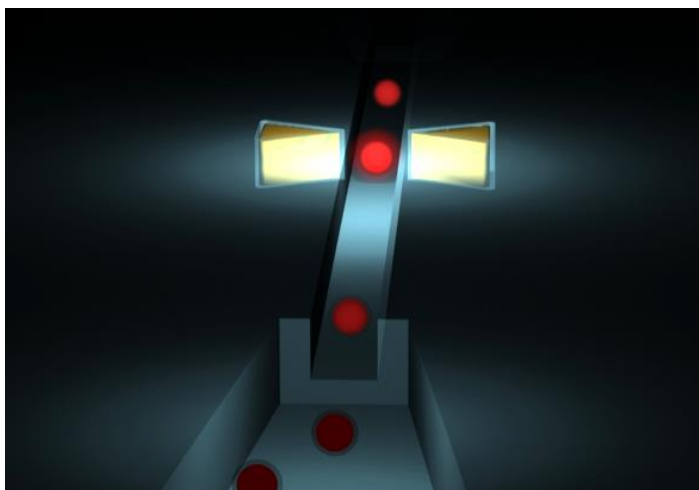
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Irene Fernandez-Cuesta

Universität Hamburg - HARBOR

Nanofluidic devices and their applications



Nanofluidic channels are unique to study not only the confinement of liquids, but also to manipulate and analyze molecules. In this talk I will show our work on the fabrication of fluidic chips with nanochannels, their integration with different active components, like plasmonic antenna or suspended membranes, and their applications mainly in biomedicine.

We have developed a variety of fluidic devices, where the nanochannels are interfaced with different inlets, what strongly influences the molecular flow. We have also integrated the nanochannels with gold plasmonic bowtie antennas, what allowed us to observe the filling up of the nanochannels in real time. And we have

also developed a method to make the nanochannels suspended, what opens new ways of studying the confinement of liquids in such systems. As applications, we use them for DNA optical mapping of single molecules or for quantification of single particles, like quantum dots, proteins or viruses, which can be counted one by one.

- (1) Esmek, *Bios Bioel X* 2021
- (2) Esmek, *Nanotechnology* 2021
- (3) Czech-Sioli, *PLoS Pathogens* 2020
- (4) Fernandez-Cuesta, *Lab Chip* 2019
- (5) Esmek, *Nanoscale* 2019
- (6) Mueller, *IEEE MEMS*, 2023