



University of Stuttgart
SFB 716

Colloquium of the SFB 716

October 25th, 2018 | 4 pm

University of Stuttgart
Campus Vaihingen
Allmandring 3
Room 1.079

The Collaborative Research Center (SFB) 716 invites to the upcoming colloquium. In this lecture series guest speakers and members of our subprojects inform about their results regarding the dynamic simulation of systems with large particle numbers.

TALK

Prof. Dr.
Zuzanna Siwy

Department
of Physics and
Astronomy

University of
California

Solid/liquid interfaces in various media: designing components of ionic circuits

Properties of solid/liquid interface determine transport properties of nanosystems such as nanopores. Inspiration to probe ionic and molecular transport at the nanoscale comes from nature where ion channels in a cell membrane regulate transport of ions in and out of the cell.

Channels that are responsive to external stimuli including change of the transmembrane potential, chemical or mechanical stress are the basis of all physiological processes of a living organism. I will describe our efforts to prepare biomimetic nanopores with tunable geometry and surface characteristics, which function as a rectifier, diode, and transistor for ions. These system could also be considered as ionic equivalents of electronic devices. I will also present our newest results on designing nanopores that are selective for one type of cation, mimicking the behavior of biological potassium channels. Our potas-

sium selective nanopores transport potassium ions 100 times more efficiently than sodium ions. Finally, I will discuss unique properties of solid/liquid interfaces in organic media. Experiments will be shown, which demonstrate that a solvent can play an important role in the formation of effective surface potential.