



PHYSIKALISCHES KOLLOQUIUM

Vortrag: **Prof. Dr. Julia Dshemuchadse**
Department of Materials Science and Engineering
Cornell University



Thema: **Soft-matter crystallography: assembling complex structures with simple models**

Zeit und Ort: Dienstag, 22.6.2021, 16:40 Uhr
Online-Meeting: ZOOM
<https://tu-dresden.zoom.us/j/87566595264?pwd=N0xwWUhObzU0NEdQNUluS1J0RnU2dz09>
Meeting-ID: 875 6659 5264 // Kenncode: Coll@2206

Leitung: Prof. Dr. Jochen Geck

Kurzfassung: Self-assembly processes in soft condensed matter have been leading to the discovery of a variety of ordered structures. Mesoscale building blocks—such as nanoparticles, colloids, or micelles—often form simple packings, but a growing number of increasingly complex structures are now being discovered. We investigate the variety of crystal structures stabilized by minimalistic particle models via numerical simulations and examine the robustness of their structure formation. Hard anisotropic shapes or isotropic particles that interact with multi-well pair potentials can form structures that correspond to atomistic systems with various types of chemical bonding, but we also observe particle arrangements without any atomic-scale equivalents. We study the structural behavior of different types of simple particles, as well as the process of crystal growth, with the goal to provide design targets for soft materials with new properties. By investigating these behaviors and features in abstract systems, we aim to deduce overarching rules of structure formation in order to identify fundamental principles of the emergence of order in condensed matter.

Biographie: Julia Dshemuchadse studied physics at TU Dresden and earned her PhD in materials science at ETH Zurich in Switzerland. She later joined the University of Michigan, Ann Arbor as a postdoctoral researcher on a fellowship from the Swiss National Science Foundation. In 2015 she earned the Max-von-Laue Award from the German Crystallographic Society and in 2016 she was awarded an Outstanding Postdoctoral Fellow Award at the University of Michigan. She joined the Department of Materials Science and Engineering at Cornell University as an Assistant Professor in 2019.

