

**PHYSICAL COLLOQUIUM**

**INVITATION**

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Monday, 08.11.2021, 4.15 p.m.,  
video conference: <https://meeting.uol.de/b/anj-2vc-j6s-fwe>

speaks

**Ass. Prof. Timur Shegai,**  
**Nano and Biophysics, Department of Physics,**  
**Chalmers University of Technology in Gothenburg, Sweden**

about

**"Strong light-matter coupling:  
from transition metal dichalcogenides to Casimir self-assembly"**

Strong light-matter interactions are at the core of many electromagnetic phenomena. In this talk, I will give an overview of several nanophotonic systems which support polaritons - hybrids between light and matter, as well as try to demonstrate their potential usefulness in applications. I will start with transition metal dichalcogenides (TMDs) and specifically discuss one-dimensional edges in these two-dimensional materials. I will show that TMDs can be etched along certain crystallographic axes, such that the obtained edges are nearly atomically sharp and exclusively zigzag-terminated, while still supporting polaritonic regime. Furthermore, I will show that Fabry-Perot resonators, one of the most important workhorses of nanophotonics, can spontaneously form in an aqueous solution of gold nanoflakes. This effect is possible due to the balance between attractive Casimir-Lifshitz forces and repulsive electrostatic forces acting between the flakes. There is a hope that this technology is going to be useful for future developments in self-assembly, nanomachinery, polaritonic devices, and perhaps other disciplines.

All interested persons are cordially invited.

Sgd. Prof. Dr. Christoph Lienau, Prof. Dr. Christian Schneider