

**TT 88: Invited Talk - Tobias Korn (organized by HL)**

Time: Thursday 9:30–10:00

Location: POT 081

**Invited Talk**

TT 88.1 Thu 9:30 POT 081

**Time-resolved optical spectroscopy of 2D dichalcogenides** —

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Recently, atomically thin layers of transition-metal dichalcogenides, such as MoS<sub>2</sub> and WS<sub>2</sub>, have attracted a lot of attention. Like graphene, they can be prepared from bulk crystals by mechanical exfoliation. Unlike graphene, these materials are semiconductors with large bandgaps, and a transition from indirect to direct gap occurs

for single layers. Spin and valley degrees of freedom in these structures are coupled, and can be directly addressed via optical excitation. We will demonstrate preparation and optical characterization of single-layer dichalcogenides, heterostructures built from different two-dimensional crystals, and large-area MoS<sub>2</sub> films. Deposition of single-layer MoS<sub>2</sub> on viscoelastic substrates allows us to apply local biaxial strain and subsequently vary the bandgap. We observe large valley polarization effects in our structures in photoluminescence experiments under near-resonant excitation. Photocarrier dynamics are investigated using time-resolved photoluminescence and picosecond pump-probe spectroscopy techniques.