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Synthesis and electronic structure of single-layer TaS₂ CHARLOTTE SANDERS, ARLETTE SOHANFO NGANKEU, MACIEJ DENDZIK, MARCO BIANCHI, PHILIP HOFMANN, Aarhus University — Bulk TaS₂ is an intriguing material that exhibits charge density wave phases, Mott physics, and superconductivity; however, little work has been done on single-layer (SL) TaS₂. Progress in this area demands a method for controllably fabricating high-quality, uniform samples with low defect densities. We have succeeded in epitaxially growing SL TaS₂, using the Au(111) substrate. The monolayer exhibits a well-defined orientation with respect to the substrate, a strong preference toward forming triangular islands, and a moire superstructure. Furthermore, long deposition times lead to smooth layer-by-layer growth of TaS₂. In this talk, I will present band structure measurements acquired by angle-resolved photoemission spectroscopy (ARPES) on TaS₂/Au samples fabricated in situ at the SGM3 end station of the ASTRID2 synchrotron facility in Denmark. Scanning tunneling microscopy (STM) and low-energy electron diffraction (LEED) elucidate the material's structural properties and interaction with the substrate.

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