universität ulm

Physikalisches Kolloquium — Physics Colloquium

Einladung — **Invitation**

Monday, 30 January 2023

Lecture Hall N24/H13, at 16:15
Coffee and cookies will be served in front of the lecture hall from 16:00

Engineered growth of two-dimensional transition metal dichalcogenides for electronic and optoelectronic applications

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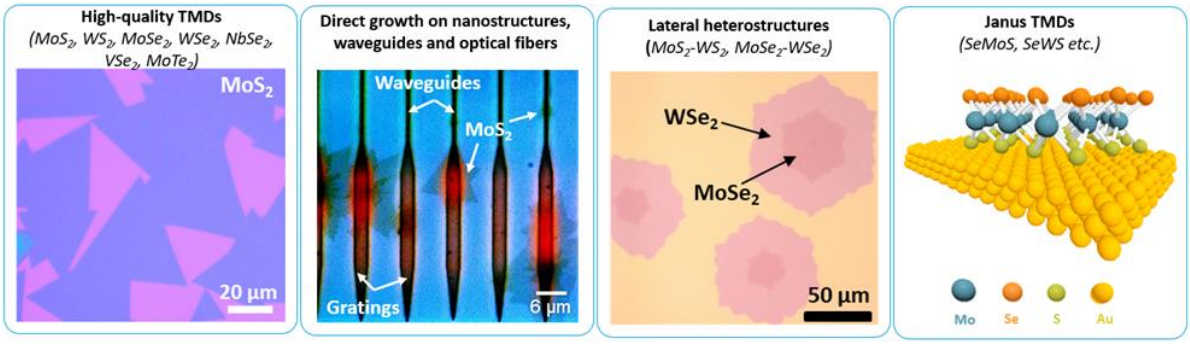
Recently, there has been significant research interest in atomically thin, semiconducting two-dimensional transition metal dichalcogenides (TMDs) due to their potential in high-performance ultrathin electronic and optoelectronic devices. To realize these applications and drive the advancement of 2D semiconductors towards commercial implementation, it is crucial to develop large-area growth methods that provide precise control over the material quality, composition, and defect density. Additionally, a thorough characterization of the grown materials at the atomic scale is necessary to fully understand their physical and chemical characteristics as well as to establish structure-property relationships. In this presentation, I will provide an overview of our recent research efforts in scalable synthesis, characterization, engineering, and device applications of semiconducting TMDs, including high-quality monolayer single crystals, TMD_1-TMD_2 lateral heterostructures, and Janus TMDs. I will also demonstrate their potential in various atomically thin device applications, such as high-responsivity phototransistors, rectifiers, photovoltaic devices, photonic devices, optical fiber-based devices, and electroluminescent light emitters.



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Host: Prof. Dr. Ute Kaiser, Electron Microscopy Group of Materials Science

Organisation: Prof. Dr. Jens Michaelis, Institute of Biophysics, jens.michaelis@uni-ulm.de, +49-731-50-23050