

Tailored growth of transition metal dichalcogenides monolayers for photonics and optoelectronics

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Two-dimensional materials (2D), their van der Waals and lateral heterostructures possess a manifold of unique electronic, optoelectronic, and photonic properties which make them highly interesting for fundamental studies and technological applications. To realize this potential, their tailored synthesis by chemical vapor deposition (CVD, MOCVD) as well as understanding the role of their intrinsic defects and 2D-material/substrate interactions are decisive. In this talk I will present an overview of our recent progress on the synthesis, characterization and studying of fundamental photonic and optoelectronic phenomena in various 2D material systems including some device applications. A particular focus will be on the transition metal dichalcogenides monolayers (TMDs), their engineered variants like Janus TMDs and lateral heterostructures as well as their integration with other low dimensional and 3D materials like, e.g., optical fibers and wave guides.

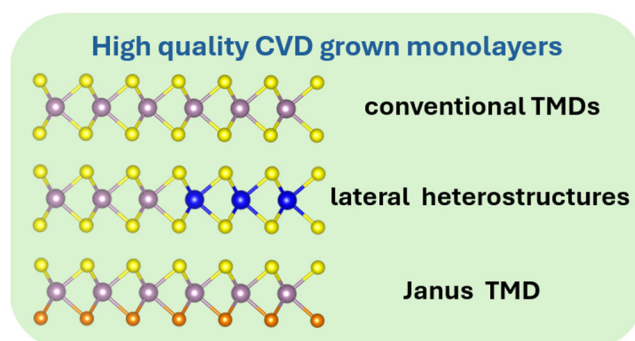


Fig. 1. Schematic representation of some 2D materials to be presented.

Acknowledgement

EU-DFG FLAG-ERA Project “H2O”, TMWWDG FGR 0088 “2D-Sens”, DFG SFB 1375 „NOA“ Project B2, SPP 2244/1 “2DMP” Project TU149/13-1 and TU149/21-1, DFG Project TU 149/16-1.

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