

Synthesizing high-quality 2D materials and (twisted) heterostacks: from surface science to industrial applications

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To make graphene appealing for several applications at high technology readiness levels, requirements such as high-quality, scalability and contamination control have to be satisfied. In this talk, I will present our approaches in this direction and how we adopt surface science to impact technology of 2D materials. I will present wafer-scale growth approaches of high-quality graphene via chemical vapor deposition (CVD) [1,2] and show how this material can be integrated on existing photonic platforms [3,4]. Furthermore, I will present results on the field of twistronics - such as large and small angle twisted bilayer CVD graphene [5,6] - and I will discuss heterostacks containing 2D gold and 1T'-MoTe₂ [7,8], exciting playgrounds for fundamental studies.

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