

## Nanoscale Engineering at Surfaces

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The increasing interest in quantum technologies puts tailor-made materials into the focus. In this context the term material is more and more understood in a wider sense to also include designer structures beyond a single crystalline phase. For example, such designer structures can be customized stacks of 2D materials as well as surface-supported nanostructures made by assembling individual atoms or molecules. A further challenge, apart from crafting the structures themselves, is studying their properties. Often, this requires the refinement of existing experimental methodology. In my talk, I will report on our recent work regarding tailor-made materials based on graphene and designer structures based on individual atoms and molecules. With increasing complexity, new properties and phenomena emerge, and the design of functional (quantum) devices becomes possible. As it turns out, even relatively simple designer structures show intriguing functionalities, including quantum dot behaviour, electrostatic potential sensing, and coherent single-electron field emission. On the analytic side, I will illustrate the power of several advanced experimental methodologies.