ON-SURFACE SYNTHESIS: A powerful tool to create covalent nanostructures

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On-surface synthesis (OSS) has emerged as a bottom up technique to create atomically precise covalent molecular nanostructures (CMN) directly on a surface. OSS allows us to engineer one and two dimensional structures from specifically designed precursor monomers.

In this seminar, I will introduce the technique and survey its potential to synthesized functional covalent nanostructures for a broad variety of applications. I will then illustrate this concept with two in-house OSS projects: (i) create chiral graphene nanoribbons with tailored magnetic and electronic ground states and (ii) molecular magneto-optical transducers by covalent linking of optically active isomers to magnetic ions. For this purpose, I will discuss the characterization of the CMN by means of scanning tunneling microscopy, spectroscopy and atomic manipulation techniques.