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Molecular nanostructures for advanced materials

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My projects focus on the study of novel molecular systems by means of low-temperature scanning tunnelling microscopy (STM), operating at 10 K under ultra-high vacuum conditions. In particular, I am focusing on molecules featuring chalcogenazolo-pyridine (CGP) moieties that persistently self-assemble through double chalcogen interactions, giving rise to ordered supramolecular structures on metal surfaces, and on double-decker paracyclophane compounds where their upper aromatic plane is electronically decoupled from the metal substrate, which makes them suitable for hosting and probing guest species. Furthermore, due to the presence of bromine atoms, in the latter compounds, they can undergo on-surface synthesis processes, such as Ullmann coupling, leading to the formation of new covalently bonded structures.

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