Controlling a Chemical Coupling Reaction on a Surface: Tools and Strategies for On-Surface Synthesis

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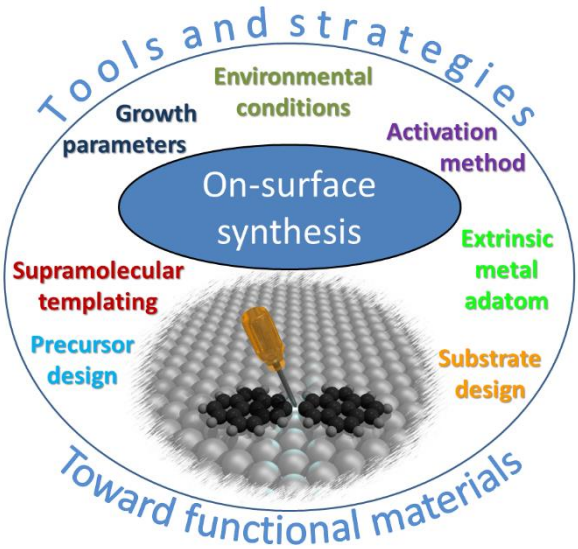
The concepts of supramolecular chemistry have been successfully applied in the last decades to create well-organized structures on surfaces. Precise control of the spatial arrangement of nanometer-sized elementary building-blocks during the "bottom-up" construction of two-dimensional monolayers can be achieved at the single atom level, thanks to the synthetic approach and to the use of advanced characterization techniques, mostly based on scanning probe microscopy. A fundamental progress has been made with the demonstration that covalent linkages between organic molecules can be created directly on a metal surface, leading to the emergence of the field of *on-surface synthesis*. In this way, original reaction pathways can be explored thanks to the strong catalytic activity of the underlying metal substrate, also acting as a confinement template [1].

I will present some recent works obtained in our laboratory in an effort to extend the amazing chemical toolbox of on-surface synthesis, using C-S activation [2], light-induced deoxygenation [3] and an.aromaticity-driven homocoupling reaction [4].



References:

1. Clair, S. and D.G. De Oteyza, *Controlling a Chemical Coupling Reaction on a Surface: Tools and Strategies for On-Surface Synthesis.* Chemical Reviews, 2019. **119**(7): p. 4717-4776.
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