

Advances in on-surface synthesis

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Abstract

In less than a decade, on-surface synthesis by covalent coupling of reactive precursors adsorbed on metallic, semi-conducting or insulating films has emerged as a powerful approach for the fabrication of novel molecular architectures with potential applications in nanoelectronics, optoelectronics and other fields where new low-dimensional materials with tailored properties are needed [1,2].

Using this bottom-up route, atomically precise graphene nanoribbons, polyphthalocyanines films, metal coordination frameworks, porous metal networks, superhoneycomb frameworks, etc. have been synthesized.

We will introduce current developments in this field such as new reactions, mechanisms, optimization of the syntheses, semi-conducting surfaces and perspectives [2].

Recent advances of thermally or photochemically activated coupling reactions on bulk insulators that have opened new avenues for molecular electronics and the fabrication of molecular logic gates will also be presented.

References

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Figure: Surface controlled polymerization of a C₆₀ monolayer on calcite [3]

