Nanostructures on metallic supported graphene: potential applications in an electrochemical environment

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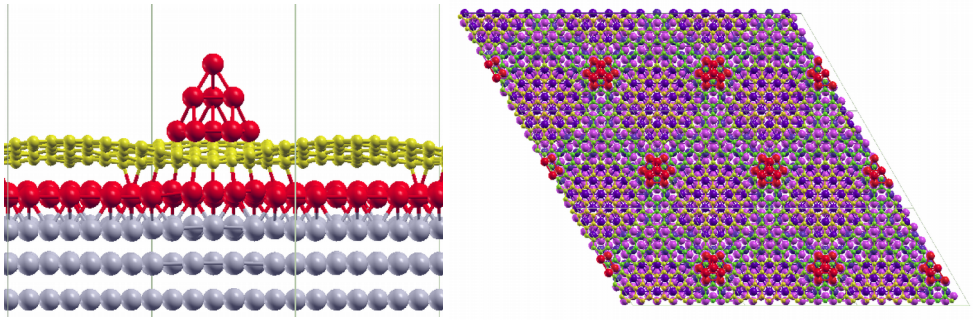
An interesting system that has recently attracted attention is graphene supported on crystalline metal substrates [1, 2]. Due to lattice mismatch a well-defined periodic Moiré pattern is formed between graphene and the metal substrate [3, 4]. Both the graphene overlayer and the underlying substrate are locally strained leading to quasi-periodic overlayer buckling and local lateral distortions.
This feature provides a natural periodically-templated substrate for self-assembled metal nano-clusters, since deposited atoms can nucleate at specific preferred sites and aggregate at these locations, forming a periodic array. The electrocatalytic properties of these systems will be intestigated.



Nano-cluster of Rh on Graphene supported on RhML/ Pt(111). (red: Rh, yellow: C, grey: Pt).

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[4] Lei Meng, RongtingWu, Lizhi Zhang, Linfei Li, Shixuan Du, Yeliang Wang and H-J Gao, J. Phys.: Condens. Matter 24 (2012) 314214.