

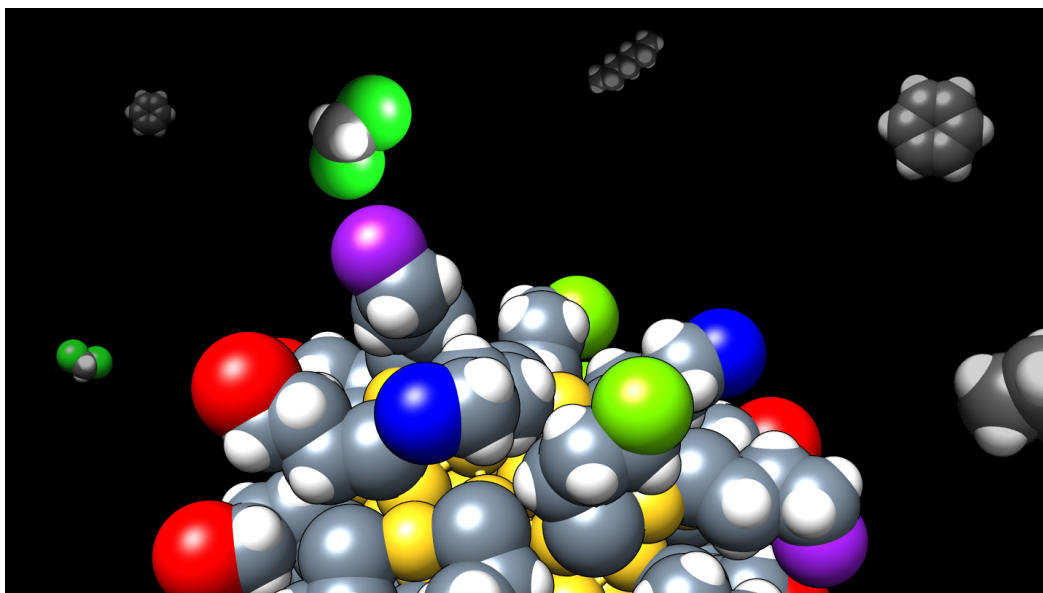
Understanding of self-organization process in monolayer protected gold nanocluster.

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The ultimate goal of nanotechnology is the realisation of “nanomachines” capable to perform sophisticated task as real machines or biological systems. In the searching of effective approaches toward such goal, nanoparticles have become principal protagonists due their unique features arising from their self-organized, multifunctional and topologically defined nature. Among nanoparticles monolayer protected gold nanoclusters (AuNCs) have risen a lot of interest due to their versatility and applicability in many fields of chemistry and nanotechnology.[1] Notwithstanding the high degree of sophistication, their self-organized nature make their synthesis straightforward. Indeed, AuNCS formation occurs via a self-assembly procedure where gold atoms form a nanocrystal of defined size (atomically precise) covered by tens of functionalised molecules forming a tridimensional monolayer.[2]

Our research activity will focus to investigate the mechanism and thermodynamic of the formation and organization of the monolayer of organic molecules coating the gold nanoclusters. The idea is to conjugate the thermodynamic information obtained by exchange experiments with morphological information obtained by MALDI and NMR experiments to understand the parameters that control the organization of the monolayer and possibly to use such parameters to control such organization.



[1] H. Häkkinen, *Nat. Chem.*, **2012**, 4, 443-455.

[2] T. Bürgi, *Nanoscale*, **2015**, 7, 15553-15567