

Title: Being a "nano-Valentino" --Towards a rational design of metallic nanoparticles

Abstract:

Nanoclusters are today of widespread use in various applications, ranging from medicine, to memory storage, optics, plasmonics, and catalysis. Such a wide range of applications is possible because of a large variety of their peculiar chemophysical properties can be tuned by playing with size and chemical composition of the nanoparticle itself. Indeed, the properties of a cluster depend on their geometry, although this relationship is not fully understood yet. In this talk, we will try to elucidate this link with examples taken from nanomagnetism [1] and nanocatalysis [2]. The general idea is to deliver a geometrical fingerprint, which can be used to predict the qualitative behaviour of a metallic nanocatalyst over a wide size range.

[1] C. DiPaola, R. D'Agosta, and F. Baletto, Nano Letters, 2016

[2] GG. Asara, L.O. Paz-Borbon, F. Baletto, ACS Catalysis, 2016.

Bio:

Francesca Baletto was awarded a PhD in Physics in 2003 at the Physics Dept., Univ. of Genoa, then she moved to ICTP as UNESCO fellow (2003-2006) and she was a research assistant at DMSE-MIT (2006-07). Francesca was appointed as Lecturer in Physics at the Physics Department, King's College in 2007, and then promoted to Senior Lecturer in 2013. Francesca's research work focuses on the development and application of numerical simulations, both ab-initio as well as classical, for the investigation of materials at the nanoscale for energy applications and atmospheric chemistry. Research interests include growth and nucleation, sampling of potential and free energy surface, magnetic and optical properties, catalytic reactions, and electron transfer processes in metallic nanoalloys, metallic surfaces and water systems in the gas phase and in the condensed phase. Her research is funded by different research bodies, including EPSRC, European COST-Action, Royal Society, FAPESP, "Science without Borders". Francesca is a mum of two young boys (4 and 5 years old).