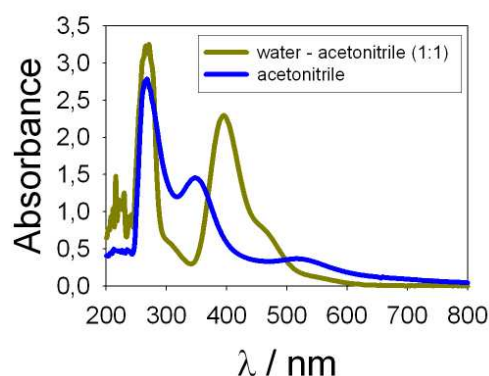


Synthesis and characterization of gold clusters by soft chemical routes

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We have developed different methods to synthesize metallic clusters (sub-nm particles). In this communication, we will report different reactions and experimental conditions to prepare gold clusters of different sizes. Au clusters display interesting optical, fluorescent, and magnetic properties, which are very different from the nanoparticles and the bulk material. The reactions used in this study are based on modifications of the electrochemical method commonly used in our lab^{1,2} and on modifications of the Brust's method³.



Solvent:
water - acetonitrile



Solvent:
acetonitrile

Fig 1. Spectra of UV – Vis of Au clusters of different sizes (clearly distinguished by their different colours) obtained by an electrochemical procedure at different conditions of reaction.

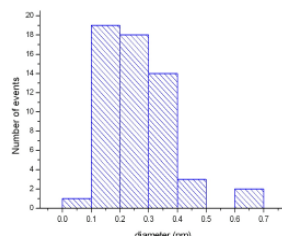
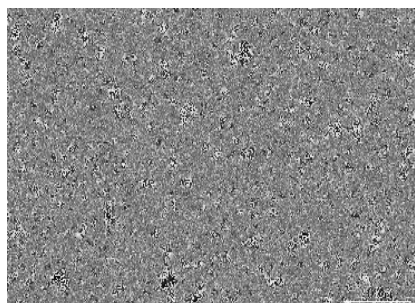


Fig. 2. TEM image showing that the size of the clusters is in the range $0,25 \pm 0,13$ nm.

¹ Rodríguez-Sánchez ML, Rodríguez MJ, Blanco MC, Rivas J, López-Quintela MA. *J.Phys.Chem.B* 2005, 109, 1183-1191.

² .L. Rodríguez-Sánchez, M.C. Blanco, M.A. López-Quintela. *J.Phys.Chem.B* 2000, 104, 9683-9688.

³ Brust, M; Walker, M; Bethell, D; Schiffrin, D A; Whyman, R J; *J. Chem. Soc. Commun*; **1994**, 801 – 802.