

## SYNTHESIS OF METALLIC ATOM CLUSTERS BY SOFT METHODS. CHARACTERIZATION AND PROPERTIES.

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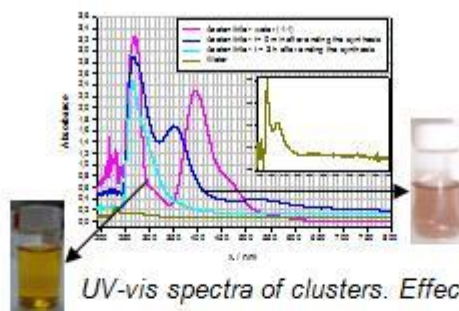
The main goal of the research carried out was to optimize the synthesis of atomic clusters and their purification; it means the control of the number of metallic atoms per cluster. Clusters were prepared by means of selective synthesis. It is observed that the sizes, geometry, and composition depend very much on synthesis conditions. A novel procedure for the production of metallic clusters based on a patent will be presented.

Our study has been based on the synthesis and study of the properties of atomic clusters of the following metals. A novel procedures for the production of this metallic clusters based on a patent will be presented. Several kinds of synthesis strategies were employed for production of these metallic atom clusters. Right now, we are able to tailor the clusters size by choosing suitable synthesis parameters. These parameters are different for each method. For example, the conditions that we can use to have a control of size of the clusters for electrochemical method are working electrode, electrolyte, solvents, current and time of synthesis, and the kind of ligands. With this method of synthesis we obtain sizes of clusters between 2 y 25-30 atoms per clusters. As an example of the possibilities offered by those techniques the preparation of specific clusters with interesting optical, fluorescent, and magnetic properties will be show.

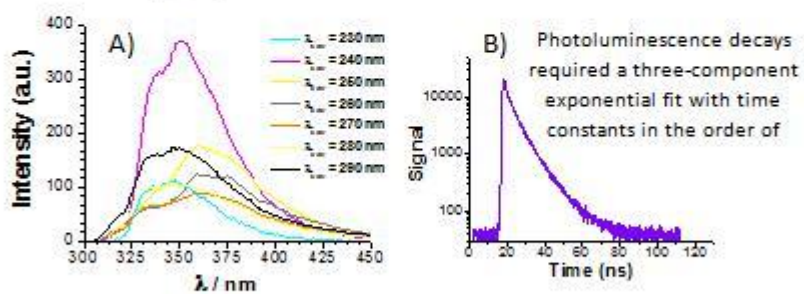
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Figures:



UV-vis spectra of clusters. Effect of change of solvent



Fluorescent properties of Au clusters. A) Fluorescent spectra of the electrochemically synthesized Au clusters at different excitation wavelengths. B) Time-resolved photoluminescence spectrum of Au