

Ústav fyzikální chemie J. Heyrovského, v.v.i.  
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zve všechny zájemce na ústavní seminář, na kterém promluví

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na téma

# **What can noble metal clusters do? From reactivity to emission**

Seminář se koná ve čtvrtek [15. listopadu 2007 od 14.30 hod.](#)

ve velké posluchárně ústavu v Praze 8, Dolejškova 3.

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# What can noble metal clusters do? From reactivity to emission

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Reactivity of silver and gold clusters towards O<sub>2</sub> and CO will be addressed in context of catalytic processes. Several open questions to be answered are: i) Is it sufficient to have an atomic oxygen for the oxidation to proceed? ii) Why is gold more special than silver? Therefore, the role of structure-reactivity relationship as well as dynamical properties such as the nature of internal vibrational redistribution (IVR) as reactivity promotion criterion will be presented. Silver clusters play an important role in a search for efficient fluorescent materials in context of advanced optical data storage media or biosensing materials. Therefore, we investigated absorption and emission properties of silver clusters in different environments: at support or interacting with biomolecules size. Structure dependent absorption and emission of silver clusters at MgO support obtained from TDDFT will be presented, with the aim to select most effective size of the clusters and the site of the support.

Furthermore, we show that optical absorption patterns of cationic silver cluster-tryptophan hybrid systems are size and structure selective. The influence of charge solvated versus zwitterionic structures on interactions of excitations between subunits plays a key role. Our joint theoretical and experimental findings provide insight into the mechanism responsible for enhancement of absorption or emission in nanoparticle-biomolecular hybrid systems.