



Comprendre le monde,
construire l'avenir



SEMINAIRE ISMO

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Adventures in Matrix-isolation spectroscopy - from atoms to biomolecules

The Matrix-Isolation technique is used, in conjunction with luminescence spectroscopy and quantum chemical calculations, to probe the interaction of optical centres in model host solids - the condensed rare gases. Two extreme systems will be presented. The first involves atoms of the alkaline earth elements, Ba and Sr, the other concerns large dye molecules – metal phthalocyanine chlorides. In both systems, extensive use is made of two-dimensional excitation-emission spectroscopy to monitor the full range of sites occupied by these heavy atoms or symmetrical polyatomic molecules. In the case of atomic barium isolated in the solid rare gases, an asymmetric 2+1 splitting pattern has been identified on the resonance $6p^1P - 6s^1S$ absorption instead of the usual Jahn-Teller splitting. Current molecular dynamics simulations point to a grain boundary being the site occupancy responsible for this unusual spectral feature. In the case of GaPcCl (gallium phthalocyanine chloride), excitation scans recorded by monitoring amplified emission have revealed resolved phonon structures on the Q-band. The increased electron-phonon coupling strength of this molecule compared with previously studied free-base phthalocyanine (H_2Pc) or zinc phthalocyanine ($ZnPc$), may be related to the non-planarity of the former molecule which gives it a permanent dipole moment, absent in the latter, planar systems.

**Attention :
Nouveau
bâtiment**

Mardi 5 décembre 2017 à 11h
Amphithéâtre du bât 520 (3^{ème} étage)
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