THIN FILMS OF METAL-ORGANIC COMPLEX SYSTEMS DEPOSITED BY MAPLE (MATRIX ASSISTED PULSED LASER EVAPORATION)

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Laser ablation of materials or pulsed laser deposition (PLD) has become a very common procedure in obtaining thin films of complex structures, since the stoichiometry of the target material is preserved. Although this technique is relatively versatile, easy and not very demanding in terms of setup arrangements, not all materials can be processed with a laser. Sensitive, complex metal-organic materials need to be irradiated in a different way, not to be decomposed. For that, an alternative to PLD is matrix assisted pulsed laser evaporation (MAPLE), which is a technique where the target material is actually a liquid solution, usually frozen, that contains a maximum of 4% active material, and where the solvent acts as an absorbing matrix during the laser irradiation.

Metal-containing compounds are often used as precursors for reduced-scale materials synthesis with applications in sensors, electronics, optical instruments, etc. This presentation will discuss the preparation of thin films of a complex of o,o`-dihydroxy azobenzene with a Cu^{2+} cation, that was found to organize in non-central symmetric crystallites. A simple protocol is developed for the *in-situ* fabrication of highly monodisperse copper-complex nanoparticles in a polymer film matrix of polyacrylic acid, that were deposited on silicon and quartz substrates by Matrix Assisted Pulsed Laser Evaporation (MAPLE) technique, using a Nd:YAG laser working at 266 nm. The compounds preservation after the deposition has been analyzed by Fourier Transform Infrared (FTIR) spectroscopy and the obtained morphologies were investigated by Atomic Force Microscopy (AFM).

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