



## Second Laureate Fundamental Research



◆ **Project Title:** Synthesis, Characterization and Thermal, Luminescence as well as Porous Properties Studies of Metal-Organic Polymeric Compounds at Nanometer Scale: New Precursors for Preparation of Metallic Compounds Nano-Structures

◆ **Researcher:** Ali Morsali (Ph.D.)

### Abstract:

Nano-structures of some new metal-organic polymers with different morphologies have been synthesized by the reaction of bridging ligands with different metal ions via sonochemical irradiation. Reaction conditions, such as the concentration of the initial reagents and the power of the ultrasonic device were varied and the results show that they significantly influence the growth process and the size and morphology of the final products. Nano-Structured metallic compounds were prepared from nano-structures of new metal-organic polymers by calcination in argon and air atmospheres. The structures of new metal-organic polymers were determined by single crystal X-ray crystallography and the nano-structures were characterized by X-ray powder diffraction (XRD), scanning electron microscopy (SEM) and transmission electron microscopy (TEM). The thermal stability, luminescence as well as porous properties of nanosized and single crystalline samples were studied and compared.