

SYNTHESIS OF NEW POLYMERIC EUROPIUM-(III) METAL-ORGANIC FRAMEWORKS

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Metal-organic frameworks (MOFs) has attracted attention during the last two decades as promising materials because of their particular structures, since they can be rationally tuned by ligand structures and coordination geometries of metal ions. Such compounds can be successfully applied in gas storage/separation, catalysis, luminescence, magnetism, drug delivery, among others. In this sense, this work reports the use of rare-earth (RE) ions with organic ligands to obtain new MOFs with optical and catalytic properties. The synthesis of the materials comprised the use of microwave irradiation, employing europium (III) as the RE element and 1,4-diazabicyclo[2.2.2]octane and terephthalic acid as ligands to built the final structures. After few minutes of irradiation, stable crystalline solids are obtained and separated by filtration. Infrared spectroscopy (FTIR), power X-ray diffraction (PXRD), and thermogravimetric analysis (TGA) indicated the formation of luminescent MOFs crystals. Diffuse reflectance (DRS) and luminescence spectroscopy showed the presence of europium (III) and the influence of the ligands in its optical characteristic. Scanning electron microscopy (SEM) showed the formation of interesting morphologies. The improvement on the quality of the crystal particles is necessary to achieve the single-crystal X-ray diffraction characterization and full elucidation of the MOF structure.

CAPES, CNPQ, FAPESP

References

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