

## Solvothermal Synthesis and characterization of nanoporous Ni-Metal organic framework-74

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### Abstract

A nanoporous nickel metal-organic framework-74 was synthesized by solvothermal method from 2,5-dihydroxyphthalic acid and Nickel(II) Nitrate Hexahydrate  $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ . The Ni-MOF-74s were synthesized through an interaction between coordinates of metal ion (nickel) and bridging ligands (2,5-dihydroxyphthalic acid). The Ni-MOF-74 were characterized by scanning electron microscopy (SEM), X-ray diffraction (XRD) analysis, energy dispersive x-ray analysis (EDX) and Fourier-transform infrared spectroscopy (FT-IR).

**Key words:** Metal –organic framework, Nickel, solvothermal

### 1- Introduction

The synthesis of Metal organic frameworks with different sizes and shapes has been of interest in recent years due to their unique properties, such as surface, quantum size, catalytic and volume effects. MOFs have classified a new type of highly porous materials which can be synthesized through an interaction between coordinates of metal ions (nodes) and bridging ligands, under appropriate conditions [1]. MOFs as 3-dimensional structures exhibit various topologies along with individual properties like tunable porosity, high surface area from 1000 to 10400  $\text{m}^2\text{g}^{-1}$ , simple synthesis routes, and adequate resistance. Owing to these possessions, these materials have been applied in different areas like adsorption phenomena [2], separation [3-5], gas storage [6-7] and drug delivery [8]. Among