

# MOFs nanomaterial synthesis by non-thermal plasma technology

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## Introduction

Nanomaterials synthesized by non-thermal plasma technology have received significant attention in various fields. ZIF-8, a typical class of metal-organic frameworks (MOFs) materials, possesses robust porosity, significant thermal stability and chemical stability. The ZIF-8 nanomaterials, synthesized by non-thermal plasma at atmospheric pressure, present great potential in many applications.

## Project summary

The motivation of the study is to synthesize MOFs nanomaterials such as ZIF-8 through a simple, fast and effective non-thermal plasma-assisted process. Chemical solutions containing metal ions and organics are used as precursors for nanoparticle synthesis under the function of plasma. The adjustable transfer of electrons is able to control the reaction rate of nanoparticles synthesis and has the potential to influence the morphology and structure of the product by the variation of plasma operating parameters. Afterward, the synthesized products will be characterized by complementary analytical methods such as FTIR, SEM and TEM. Their specific surface area and pore size will be studied by BET. In addition, possible mechanisms for MOFs nanomaterial synthesis will be investigated by correlating optical emission spectroscopic study.

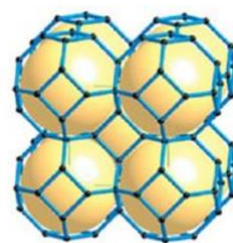


Fig.1 ZIF-8

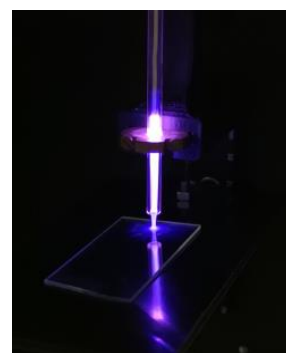


Fig.2 Plasma jet

## Project goals

- Synthesizing MOFs nanomaterials by the non-thermal plasma technology.
- Explore the effect of plasma on the structure and morphology of synthesized MOFs nanomaterials.

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