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Investigating the effect of time on the morphology and crystallinity of MIL-125 in the solvothermal synthesis method

Hossein Daneshgar [a] ,**Navid Rabiee** [b c], **and Mojtaba Bagherzadeh** [a*]

[a]*Department of Chemistry, Sharif University of technology, Tehran, Iran*

[b]*Centre for Molecular Medicine and Innovative Therapeutics, Murdoch University, Perth, Western Australia 6150 Australia*

[c]*School of Engineering, Macquarie University, Sydney, New South Wales 2109 Australia*

[*]*E-mail: bagherzadeh@sharif.edu*

The use of metal-organic frameworks(MOFs) is constantly expanding. MIL-125 is one of the most important and widely used cases[1]. Several methods have been reported for the synthesis of this framework, such as the use of reflux and autoclave in solvothermal synthesis[2]. Synthesis time is one of the most important parameters in synthesis, which includes energy consumption and time, which are two important parameters in research. In this research, the synthesis of MIL-125 was done by solvothermal method, and in an autoclave, we specifically investigated the effect of time on morphology and crystallinity. Our results showed that the 24-hour synthesis had the best results among the times of 6, 12, 18, and 24h. These results were also checked with 72-hour time and reflux conditions, which most of the syntheses are reported in the reports with this method, and it was shown that 24-hour time with autoclave had a favorable and acceptable result [3]. This means that there is an acceptable improvement in time and energy.

Keywords: MIL-125, Metal-organic frameworks (MOFs), Synthesis, Solvothermal

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