Title : Challenges in the Synthesis of CO_2-Based Metal-Organic Frameworks: Investigating the Sensitiveness of Synthetic Parameters for Practical Application

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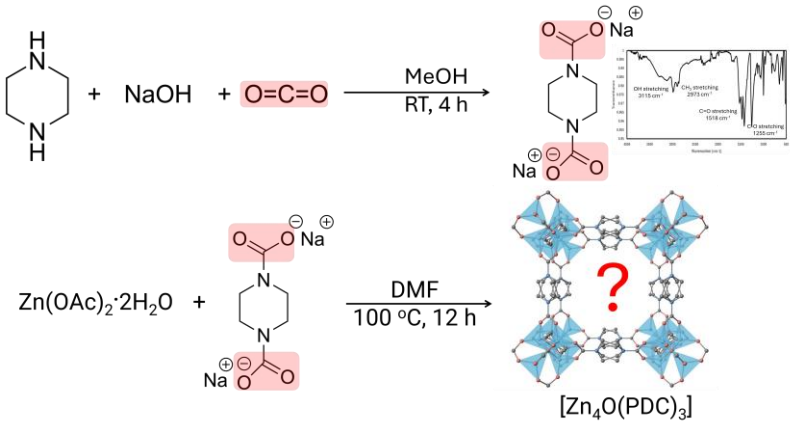
ABSTRACT

A CO_2-based MOF, $[Zn_4O(\text{piperazine dicarbamate})_3]_n$, has been recently reported in JACS as a rapid and one-pot synthesis method via in situ formation of bridging dicarbamate linkers from piperazines and CO_2. However, the reported synthetic condition was done under controlled space such as in inert atmosphere under glovebox, use expensive base and toxic organic solvent – that goes offtrack of the "green" way. Are there any reasons behind the complexity of experimental setup? This research explores and investigates the sensitiveness of the CO_2-based MOF synthesis in stoichiometry, solvent, temperature synthetic method, in order to find a practical way to synthesize the CO_2-based MOF. Powder X-ray diffraction (PXRD), Fourier transform infrared (FTIR) spectroscopy, and other techniques were employed to analyze the obtained bulk materials. The results indicate that the practical ways to applied the reported reaction is not-so-easy.



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