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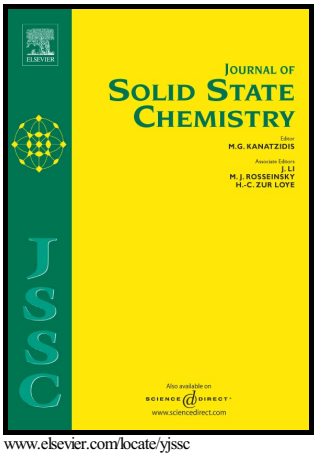

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PII: S0022-4596(17)30516-9
DOI: https://doi.org/10.1016/j.jssc.2017.12.027
Reference: YJSSC20069

To appear in: *Journal of Solid State Chemistry*

Received date: 20 October 2017
Revised date: 8 December 2017
Accepted date: 23 December 2017

Cite this article as: Zahra Nadizadeh, M. Reza Naimi-Jamal and Leila Panahi, Mechanochemical solvent-free in situ synthesis of drug-loaded $\{Cu_2(1,4\text{-bdc})_2(dabco)\}_n$ MOFs for controlled drug delivery, *Journal of Solid State Chemistry,* https://doi.org/10.1016/j.jssc.2017.12.027

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Abstract

In the present study, ibuprofen-loaded nano metal–organic frameworks (NMOFs) $\{Cu_2(1,4\text{-bdc})_2(dabco)\}_n$ and $\{Cu_2(1,4\text{-bdc-}NH_2)_2(dabco)\}_n$ (bdc=benzenedicarboxilic acid, and dabco=diazabicyclooctane) were synthesized by ball-milling at room temperature in 2 hours. The produced drug-loaded Cu-NMOFs were studied as ibuprofen drug delivery system and exhibited well-defined drug release behavior, exceptionally high drug loading capacities and the ability to entrap the model drug. The loading efficiency for ibuprofen was determined about 50.54 % and 50.27%, respectively. The drug release of NMOFs was also monitored, and all of the loaded drug was released in 1 day. The NMOFs were characterized by FT-IR spectroscopy, X-ray powder diffraction (XRPD), thermogravimetric analysis (TGA), SEM (scanning electron microscopy), transmission electron microscopy (TEM), energy-dispersive X-ray spectroscopy (EDS), inductively coupled plasma (ICP), UV–vis spectroscopy and N_2 adsorption porosimetry (BET & BJH).

Graphical Abstract