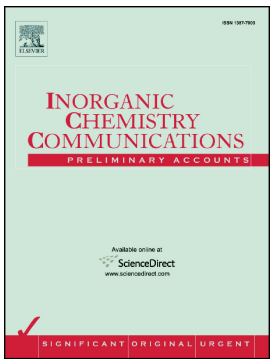

A feasible method to measure the content of core and shell in heterostructural perovskite MOFs through differential scanning calorimetry

Dangwu Ma, Quan Zhou, Dong Li, Haixia Zhao, Lasheng Long, Lansun Zheng

PII: S1387-7003(18)30171-0
DOI: doi:10.1016/j.inoche.2018.03.020
Reference: INOCHE 6924

To appear in: *Inorganic Chemistry Communications*

Received date: 1 March 2018
Revised date: 19 March 2018
Accepted date: 23 March 2018

Please cite this article as: Dangwu Ma, Quan Zhou, Dong Li, Haixia Zhao, Lasheng Long, Lansun Zheng , A feasible method to measure the content of core and shell in heterostructural perovskite MOFs through differential scanning calorimetry. The address for the corresponding author was captured as affiliation for all authors. Please check if appropriate. Inoche(2017), doi:10.1016/j.inoche.2018.03.020

A feasible Method to Measure the Content of Core and Shell in Heterostructural Perovskite MOFs through Differential Scanning Calorimetry

Dangwu Ma[a,†], Quan Zhou[b,†], Dong Li[a], Haixia Zhao[a,*], Lasheng Long[a,*], Lansun Zheng[a]

[a]Collaborative Innovation Center of Chemistry for Energy Materials; State Key Laboratory of Physical Chemistry of Solid Surfaces; Department of Chemistry College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, P. R. China.

[b] Department of Chemistry College of Chemistry and Chemical Engineering, Huangshan University, huangshan 245041, P.R. China.

Abstract

The core-shell heterostructures of $[(CH_3)_2NH_2][Mn(HCOO)_3]$@ $[(CH_3)_2NH_2][Co(HCOO)_3]$ and $[(CH_3)_2NH_2][Mn(HCOO)_3]$@$[(CH_3)_2NH_2][Ni(HCOO)_3]$ were prepared via epitaxial growth. The obtained heterostructural crystals were characterized by single-crystal and powder X-ray diffraction analysis, and energy dispersive spectrometer (EDS) elemental mappings. Investigation on the differential scanning calorimetry (DSC) of the heterostructural crystals with different mole ratio of the core to shell indicates that the plot of DSC peak area versus mole ratio of core to shell exhibits a linear relationship. Thus, to an unknown heterostructural compounds with distinct phase transition, the mole ratio of core to shell can be easily obtained just by measuring their DSC data.

Keywords: Core-Shell Composite, Perovskite MOFs, Epitaxial growth, DSC