ADDRESSING ARRANGEMENTS OF MULTIPLE METAL CATIONS IN MOFs OF HIGHER COMPLEXITY

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In recent years, the development of metal-organic frameworks, MOFs, that incorporate multiple metal elements within their structure has continued to receive increasing attention because the possibility to combine various metal cations results in new or enhanced properties and behaviors. However, to fully exploit a new level of complexity offered by multi-metal MOFs, it is still required to gain a higher level of control on the incorporation and disposition of the different cation combinations.
Bearing this in mind, we have studied several MOF families composed of the combination of multiple metal cations from a synthetic and structural perspective. We found that the adjustment of the initial metal combinations has a key impact on the distribution of the cations within the MOF secondary building units, which can be exploited to obtain different types of atomic arrangements and sequences. Moreover, we found that for certain metal combinations, different elements might have a prevailing effect on crystallization mechanism, which is manifested on compositional but also on morphological features of the crystals. Additionally, when using multi-metal MOFs as precursors to obtain other classes of catalytically active solids, the different types of possible initial metal arrangements are decisive in the process of programing and translating new chemical compositions.

Referencias

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