Poster Presentation

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*Calix[4]arene-Based MOFs Controlled by Length of Alkyldiammonium Guests*

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Our interest in the development of MOFs with the cavities controlled by guest species has led us to investigate the MOFs based on calix[4]arene derivatives, in which metal ions link the calix unit to give the networks with the cavities accommodating several guest species, because the calix[4]arene-based MOFs contain porosity associated with both the ligand itself and the structural framework. In the present work, we employed a low rim-functionalized calix[4]arene tetraacetic acid (H₄CTA) with 1,3-alternative conformation as a multidentate building block and alkyldiamines as the guest molecules. In the solvothermal reaction of H₄CTA and Zn(II) ion in the presence of alkyldiamines, two types of new MOFs based on calix[4]arene tetraacetate (CTA⁴⁻) depending on the lengths of α,ω-alkyldiammonium guests have been synthesized by including suitable alkyldiammonium guests. Their single-crystal X-ray diffraction analyses reveal that the short alkyldiammonium guests such as ethyldiammonium, propyldiammonium, and butyldiammonium lead to form two-dimensional framework with the cavity consisting of two CTA⁴⁻ and four Zn(II) ions whereas the alkyldiammonium guests such as heptyldiammonium, octyldiammonium, nonyldiammonium, and decyldiammonium give rise to generate three-dimensional network with the cavity surrounded by six CTA⁴⁻ and four Zn(II) ions. The alkyldiammonium guests in both MOFs are well accommodated by each cavity via a variety of supramolecular interactions including electrostatic interactions, hydrogen bonds and van der Waals interactions. We will present and discuss a study on the syntheses and characterization of two new MOFs based on calix[4]arene derivative.

**Keywords:** Host-Geust Interactions, Metal-Organic Framework, Calix[4]arene