MS20-P13 *In situ* crystallographic evidence to isolate pore forms under gas pressure in a flexible Zn(II)-MOF

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A variety of rigid porous metal organic frameworks (MOFs) have been synthesized which have shown potential application in terms of catalysis and gas separations due to high porosity and pore volumes.[1] As compared to rigid porous MOFs, due to the tunability of size, shape and pores by using desired metal ions and the organic linkers, a number of flexible MOFs have been reported.[2] As a result of this flexibility, MOFs can undergo expansion or contraction of the pores in the presence or absence of the guest molecules to produce structural change.[3] The flexible MOFs have better affinity to offer variety of pores on adsorption of different molecules which can be stabilized by non covalent interactions such as H-bonding, π···π inetraction or van der Waals interations etc. If these different pore forms can be isolated without losing single crystallinity, the exact interaction of the guest molecules with the host framework can be easily understood. We report a flexible Zn(II)-MOF that displays different pore forms (**PF1→PF3**) under ethane gas pressure. These systems have been characterized by single-crystal X-ray diffraction using an environmental gas cell.[4] The pore forms were further verified by gas sorption analysis and high pressure differential scanning calorimetry.

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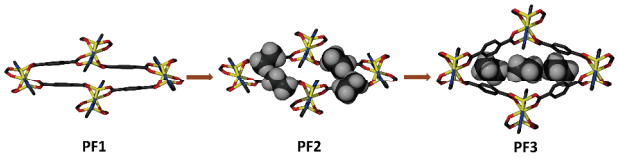

Figure 1. Diagram showing different pore forms of Zn(II)-MOF under ethane gas pressure

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