

## Poster Presentation

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### *Porous metal-organic frameworks incorporating mixed ligands*

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Metal-organic frameworks (MOFs), infinite systems built up of metal ions and organic ligands have been extensively studied in materials and supramolecular chemistry due their structural diversity and application as porous materials, in catalysis, ion exchange, gas storage and purification. [1] A novel, 2-fold interpenetrated, pillared, cadmium metal-organic framework was synthesized using trimesic acid and 1,2-bis(4-pyridyl)ethane.[2] Single crystal X-ray analysis revealed a 2-fold interpenetrated, 3-dimensional framework which exhibits a 3,5-connected network with the Schläfli symbol of  $[(6^3)(6^9.8)]$  and hms topology. This compound exhibits a temperature-induced single-to-crystal-single-crystal (SC–SC) transformation upon the release of N,N'-dimethylformamide (stable up to 300 °C). SC–SC transformation was also observed when the desolvated form absorbed selected polar and non-polar organic solvents. In addition, gas (N<sub>2</sub>, CO<sub>2</sub> and N<sub>2</sub>O) sorption experiments were performed showing 2.5% N<sub>2</sub>, 4.5% CO<sub>2</sub> and 3.4% N<sub>2</sub>O absorption by mass at room temperature and moderate gas pressures (~10 bar). A similar MOF was produced when 1,3,5-benzenetricarboxylic acid was replaced with 5-nitro-1,3-benzenedicarboxylic acid. This MOF displays 4-fold interpenetration and also maintains the host framework structure upon heating.

[1] Mueller, U., Schubert, M., Teich, F., Puetter, H., Schierle-Arndt, [2] Husain, A., Ellwart, M., Bourne, S.A., Öhrström, L., Oliver, C.L., (2013), *Crystal Growth & Design*, 13, 1526-1534.

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