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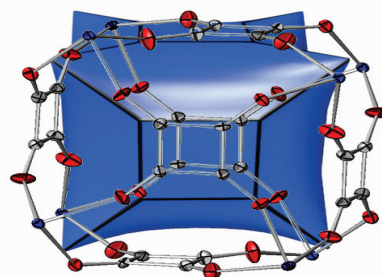
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A New Sc MOF Built up from Octadecasil Zeolitic Cages as Heterogeneous Catalyst. Felipe Gándara^a, Berta Gómez-Lor^a, Marta Iglesias^a, Natalia Snejko^a, Enrique Gutiérrez-Puebla^a, Angeles Monge^a. ^a*Department of Synthesis and Structure of Oxides, Instituto de Ciencia de Materiales de Madrid-CSIC.*
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Metal-organic Frameworks (MOFs) continue receiving a great attention since they are a very attractive type of materials due to their potential applications in several fields^[1]. Specific organic and inorganic units, with predefined geometric characteristics, are employed to obtain predesigned secondary building blocks, with the aim of obtaining networks with preferred features, and therefore, desired properties. We have selected an organic ligand with a well defined geometry, like is the squarate dianion and scandium, a trivalent cation that is usually found in octahedral environment. The combination of these two well geometrically defined building elements has led to the formation of a new Metal-organic framework with a zeolite related structure, and with interesting properties as heterogeneous catalyst. The new framework is constructed with presence of zeolitic cages of the AST type, formed by six 4MR and twelve 6MR. Each scandium atom belongs to two adjacent cages since they are coordinated to six O atoms from six different squarate anions: The result is a new binodal net, 3 and 6 connected net with point symbol

(4.6²)₆(6⁶.12⁹). The new material is stable above 400 °C and it has been tested as an acid heterogeneous catalyst in cyanosilylation and acetalization of carbonyl compounds. A high degree of conversion is achieved with the new Sc-MOF as catalyst, which can also be easily recovered and reused in several cycles of reaction.



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Axial Ligand Removal and Subsequent Pillaring of a Layered Zinc Dicarboxylate MOF. P. Smart^a, C. Mason^a, A. J. Florence^b, L. Brammer^a. ^a*Department of Chemistry, University of Sheffield, UK,* ^b*Department of Pharmaceutical Sciences, University of Strathclyde, Glasgow, UK.*

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Vapour diffusion of pyridine into an ethanolic solution of zinc nitrate and (+)-camphoric acid produces a MOF comprising of Zn₂ paddlewheel units bridged by camphorate to form a 2D layered structure. The axial sites of the paddlewheel are occupied by coordinated pyridine and the remaining inter-layer space is occupied by ethanol. Heating this framework removes the trapped ethanol and the coordinated pyridine in a two step process. The alcohol-free framework remains crystalline and several other alcohols can then be taken up into the framework including the chiral alcohol 1,2-propanediol. Heating the framework removes the coordinated pyridine ligands to produce a semi-crystalline material of the formula [Zn₂(Camphorate)₂]. This semi-crystalline 2D material can then be used as a starting material to produce frameworks with various ligands coordinated in the axial position of the Zn₂ paddlewheel. Reaction with solutions of ditopic diimine pillaring molecules such as pyrazine and 4,4'-bipyridine result in 3D MOFs with large pores. Reaction with substituted pyridines produces frameworks which have proved difficult to make by other methods. X-ray powder diffraction using both lab and synchrotron radiation was used to follow the ligand uptake reactions and to structurally characterise the pillared MOFs.