

MS26-P12 Lanthanide MOFs: searching for efficient solvent-free catalysts. M. Angeles Monge, Richard F. D'Vries, Marta Iglesias, Natalia Snejko, and Enrique Gutiérrez-Puebla, *Instituto de Ciencias de Materiales de Madrid, CSIC, Cantoblanco 28049 (Madrid) Spain*
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Three Ln-based 2D metal-organic polymer compounds [Ln(3,5-DSB)(Phen)] (Ln = La, Pr, Nd; 3,5-DSB = 3,5-disulfobenzoate; Phen = 1,10-phenanthroline) were hydrothermally synthesized. The compounds RPF-18-Pr and RPF-18-La are isostructural while the compound RPF-19-Nd presents the same stoichiometry, with a particular structure. They belong to two 2D structural types and their nets own different topologies [1],[2]. The isostructural Ln and Pr compounds are formed by one phenanthroline molecule and five 3,5-DSB ligand molecules in octa-coordinate disposition around to the cations and crystallize in the monoclinic space group C2/c; it owns an unidinal five connected SP 2-periodic net (6,3)IIa. The Nd has a nine-coordinated environment and crystallizes in the space group P2(1)/c forming binodal 3- and 6- connected kgd net. The procedure clearly demonstrates that RPF-19 is an excellent catalyst for the preparation of silyl ethers in relatively short reaction time with low catalyst loading under solvent-free conditions [3].

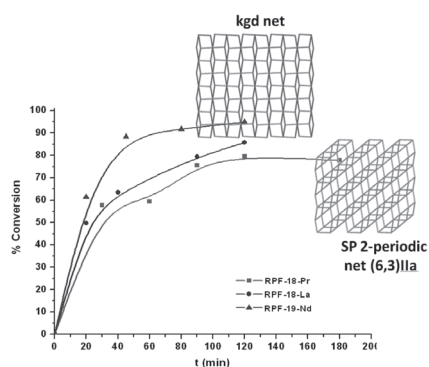


Figure 1. Kinetic profiles for benzaldehydecyanosilylation for RPF-18-Pr, RPF-18-La, RPF-19-Nd.

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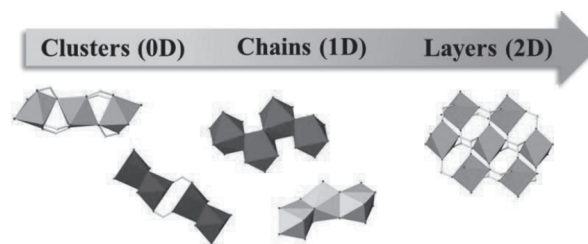
Keywords: metal-organic frameworks; heterogeneous catalysis; topological aspects of structure.

MS26-P13 Insight into the SBU variety in Alkaline-Earth Metal-Organic Frameworks. Ana E. Platero-Prats,^{ab} Natalia Snejko,^c Enrique Gutiérrez-Puebla^c and Ángeles Monge.^c ^aBerzelii Center EXSELENT on Porous Materials and ^bDepartment of Materials and Environmental Chemistry, Stockholm University, Sweden, ^cDepartment of New Architectures in Materials Chemistry, Instituto de Ciencia de Materiales de Madrid, Spain.
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Crystalline porous materials have become one of the major areas of research during the last few decades. In this field, **Metal-Organic Frameworks** (MOFs) have aroused special interest due to their multiple applications, [1] including magnetism, non-linear optics, gas storage, and catalysis. The increasing number of MOFs reported in the last years has offered a rich variety of new structural types to Materials Science. In this sense, Crystallography has played an important role, not only in the structure determination of novel materials, but also in finding consistent strategies to classify them. One exciting result of that is the opportunity to deconstruct the inherent chemical and structural complexity of MOFs and search for trends in their connectivity. As a result of the former, the identification of principles that govern the design and assembly of target frameworks and therefore, the prediction of novel structures is becoming more and more important in the field of MOF synthesis.

The design or prediction of new frameworks can be assisted by **reticular chemistry** fundamentals. [2] This approach is based on a perfect knowledge about the Secondary Building Units (SBU) that are implied in each case. This approach works very well when metal ions with well-defined coordination environments are used, such as Cu⁺² or Zn⁺². However, the current environmental needs have shown the importance of using non-traditional coordination metals. In this sense, **alkaline-earth MOFs** (AE-MOFs) could represent a comparatively cheap, non-toxic, and green alternative to conventional ones.

The understanding of which SBUs occur in AE-MOFs has not been addressed in a comprehensive way so far. This new challenge in reticular chemistry can be partially solved by the recent knowledge in this topic. This work deals with a description of the inorganic SBU variety found in a family of AE-MOFs that we have described during the last years. [3] All of them show interesting properties in catalysis and/or sorption under mild conditions.



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