Furukawa Group Seminar

Date

May 10th, 2023
10:00–11:00

Venue

Kyoto University, KUIAS
iCeMS Main Building

2F Seminar Room
(#A207)

Registration

· Required from Google form
(https://forms.gle/xTetp6MxaMkFjrtV7)

· On-site only

Contact

KUIAS iCeMS
Furukawa Group

furukawa-g@icems.kyoto-u.ac.jp

Practising Reticular Chemistry with Titanium-Organic Frameworks

Prof. Carlos Martí-Gastaldo

Institute of Molecular Science (ICMol)
University of Valencia (Spain)

Abstract

Reticular chemistry has boosted the design of thousands of metal and covalent organic frameworks for unlimited chemical compositions, structures, and sizable porosities. The ability to generate porous materials at will based on geometrical design concepts is responsible for the rapid growth of the field and the increasing number of applications derived. Despite their exceptional stability, the synthesis of targeted homo- and heterometallic titanium-organic frameworks amenable to these principles is relentlessly limited by the high reactivity of this metal in solution that impedes the controlled assembly of titanium molecular clusters. We will describe our recent results in the synthesis of new titanium organic frameworks by using high throughput methodologies. This approach permits producing porous crystals at high scale, that can help implementing new concepts towards energy conversion with molecular frameworks due to their unique combination of high surface area, crystallinity, photoactivity and tailorable catalytic activity.

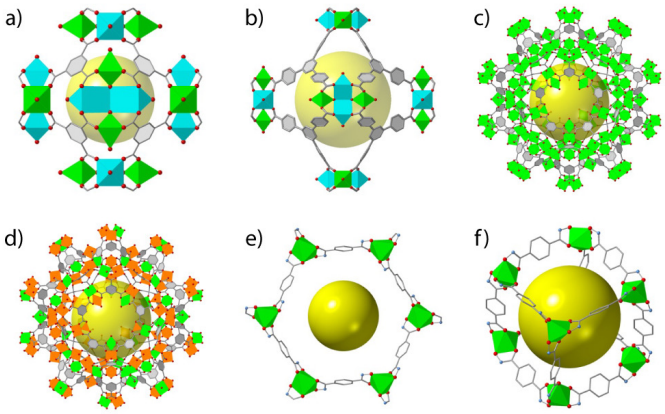

Figure. Structure of homo- and heterometallic Ti-MOFs: a) MUV-10, b) MUV-12, c) MIL-100(Ti), d) MUV-101(M), e) MUV-11 and f) cMUV-11. MUV stands for Materials of the Universidad de València.

References

[1] (a) *Angew. Chem. Int. Ed.* **2018**, *57*, 8453. (b) *Chem. Sci.* **2019**, *10*, 4313.
[2] (a) *J. Am. Chem. Soc.* **2019**, *141*, 13124 . (b) *J. Am. Chem. Soc.* **2021**, *143*, 21195.
[3] *J. Am. Chem. Soc.* **2021**, *143*, 1798.
[4] *Angew. Chem. Int. Ed.* **2022**, *61*, e202208139.
[5] *J. Am. Chem. Soc.* **2023**, DOI 10.1021/jacs.2c12718.

FURUKAWA LAB