

APPLICATION OF COBALT-CONTAINING METAL-ORGANIC FRAMEWORK AS CRYSTALLINE SPONGE

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Metal-organic frameworks (MOF) are porous coordination networks which have increasingly been used as crystalline sponges to study compounds that cannot be analysed by conventional single crystal X-ray diffraction (SC-XRD).

In this work crystal structure and porosity of $\{[\text{Co}_{1.5}(\text{TTPA})(\text{BTC})(\text{H}_2\text{O})]_2 \cdot 13\text{H}_2\text{O}\}_n$ was determined using SC-XRD and rate of solvent exchange was followed by SC-XRD and NMR.

Solvent exchange was conducted with cyclohexane, diethylether and chloroform, of which two first solvents were not altering the structure of studied MOF and were exchanging the solvent used in the synthesis. Moreover, on crystal structure,

diethylether could be seen in the pores of MOF bound through hydrogen bonding. Crystals filled with these solvents were in turn exchanged with polar guest, which was found to diffuse into pores of MOF.

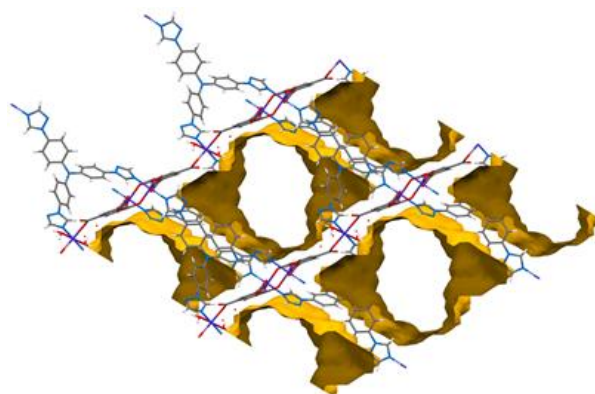


Fig.1 Measured crystal structure.
Colour code: Co purple, N blue, O red, C grey, H white

References

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