MS31-P13 | EXCEPTIONALLY FLEXIBLE COORDINATION POLYMERS OF CD(II)

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Molecular crystals have for a long been considered as brittle, inelastic, and incapable of enduring application of even relatively insignificant mechanical stress without losing their integrity. But recently, there has been a number of examples where crystals can respond to external mechanical stimuli.[1] It was shown that macroscopic mechanical behavior of crystalline material is mostly determined by the strength and geometry of supramolecular interactions as well as their mutual arrangement in a 3-D architecture.

Recently, we have for the first time reported on a class of coordination polymers of cadmium(II) with halopyrazine ligands that display tunable elastic responses to applied mechanical force.[2] To refine our understanding of this unusual phenomenon of metal-organic crystalline materials, here we report on a similar class of coordination polymers of cadmium(II) with pyrazine ligands bearing amide functionalities, capable of forming desired supramolecular topologies that allow us correlation of slight structural changes with a mechanical response. The crystals have also shown excellent elastic response to applied external stimuli that was quantified and structural changes in bent crystals were mapped.

[1] A. Worthy, A. Grosjean, M. C. Pfrunder, Y. Xu, C. Yan, G. Edwards, J. K. Clegg, J. C. McMurtrie, *Nat. Chem*. **10** (2018) 65-69.
[2] M. Đaković, M. Borovina, M. Pisačić, C.B. Aakeröy, Ž. Soldin, B.-M. Kukovec, I. Kodrin, *Angew. Chem. Int. Ed.* **57** (2018) 14801-14805.