



Figure 1. a) Computed values of X parameter for (010) and (111) layers in the structure of β -alanine; b) Sequential frames obtained during the squeezing of β -alanine crystal. Appearing secondary cleavage planes are parallel to $\{111\}$.

Keywords: Intermolecular interactions, mechanical properties of organic solids

MS33-O5 Solvent responsive 2D coordination networks: Breathing Materials

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The development of Metal Organic Frameworks (MOFs) was driven by the chemists' efforts to reproduce the microporosity observed in naturally occurring zeolites. By combining metal nodes and organic spacers, new crystalline compounds were obtained, displaying 3D porous structures and a certain robustness. Initially favoured, the 3D structures showed limitations with respect to some applications such as guest selectivity and separation. These were better achieved by another category of MOFs which were guest-responsive and dynamic: the breathing MOFs. These MOFs afforded added functionalities to that of the robust 3D materials through reversible structural transformations between large and small cavities. In this paper we will be presenting a novel 2D Breathing MOF¹⁻² assembled from mononuclear zinc(II) centres and 3-(4-pyridyl)benzoate ditopic linker. The novel material allows for the accommodation of large guest molecules with diameters larger than the original pores of their empty framework. The mechanism of the motion of the dynamic network will also be carefully described.

Keywords: MOF, sorption, crystalline structure