Our approach to crystal engineering (1) involves square-planar platinum (II) complexes containing terdentate coordinating pincer-type ligands. These complexes reversibly absorb gaseous SO$_2$ in the solid state by Pt–S bond formation (2). When the starting material is crystalline, exposure to SO$_2$ gas leads to quantitative adduct formation with the unique feature that the product is also crystalline, although the crystal structures of the adduct and the SO$_2$ free complex are significantly different from each other. Remarkably, the release of SO$_2$ gas does modify but not destroy the crystalline ordering in the arylplatinum assemblies. These crystalline transformations include repetitive expansion and reduction of the crystal lattice without detectable loss of crystallinity of the material (3). The potential of this class of supermolecules as crystalline switches with ‘on’ and ‘off’ positions which are a direct response on the gaseous environment will be discussed.

References

Keywords: ORGANOMETALLIC SWITCHES SO$_2$ ABSORPTION

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**Keywords:** STACKING, π-π INTERACTIONS, METAL COMPLEXES

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