

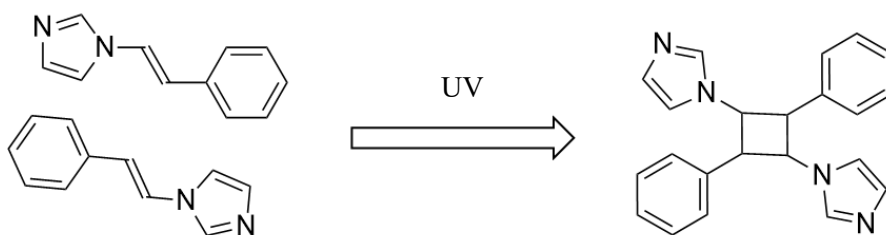
## Formation of a two-dimensional Cd complex polymer using [2 + 2] photodimerization reaction

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Polymeric metal complexes such as metal-organic frameworks/coordination polymers have been energetically studied because of their unique properties. Many of them are constructed by self-assembling of metal ions and bridging ligands in a solution. Our group is developing a new method to prepare polymeric metal complexes, a solid-state polymerization of mononuclear metal complexes induced by [2+2] photodimerization reaction. In this presentation, we report on the preparation of a two-dimensional Cd complex polymer obtained by the solid-state photoreaction of the mononuclear Cd complex with photoreactive 1-styrylimidazole (1-sim) ligand.

The mononuclear Cd complex  $[\text{Cd}(\text{CF}_3\text{SO}_3)_2(1\text{-sim})_4]$  (**1**) is coordinated by four 1-sim ligands and two  $\text{CF}_3\text{SO}_3$  anions. Focusing on the overlapping between 1-sim ligands in the crystal of **1**, we found the parallel stacking between the 1-sim ligands with the center-to-center distance of 3.626/3.465 Å, which is shorter than the Schmidt's upper threshold distance, 4.2 Å, for the [2+2] photodimerization reaction.<sup>1</sup> Upon irradiating **1** with 365 nm UV light for 72 h, ca. 61 % of 1-sim ligands dimerized as shown in figure to form a two-dimensional complex polymer bridged by 1-sim dimers.



1) Schmidt, G. M. J. *Pure Appl. Chem.* **27**, 647 (1971).