

*Silver Gelation-Promoted Solid-State [2+2] Reaction of Unsymmetrical Olefin containing Ligand*

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The solid state [2+2] photo chemical reactions of olefin containing molecules in gel state are of interest given their semi solid nature. These reactions are extensively explored in solid state and have advantages of fast reactivity, distinguished selectivity, high yields, environmental friendliness and access to molecules that are otherwise inaccessible in crystal state. Similar advantages also are expected for gel state reactions given their semi rigid nature of the materials. However, to date these reactions are remained unexplored barring some two or three recent examples. We have recently reported, the gel state [2+2] photo chemical reaction of an unsymmetrical pyridine and benzimidazole containing molecule in its Ag (I) coordination polymer. In continuation of these studies we have further explored the gelation of several olefin containing molecules with Ag (I) salts. It has been observed that the a new unsymmetrical olefin containing pyridine units form gels with Ag(I) in the MeOH.H<sub>2</sub>O solvent system and results in single crystals of coordination polymers in MeOH.DCM system. The resulted MOGs have been characterized by various microscopic techniques and the role of anions in the formation of gels with varied mechanical strengths has also been explored. Crystal structure analyses of resulted CPs were found to form 1D, 2D-coordination polymers; which are photo stable. Interestingly the MOG materials found to be photo-active in gel state but not in xero gel state. The photo products were separated and characterized by <sup>1</sup>H NMR, IR and PXRD techniques.

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