

Poster Presentation

MS115.P12

Topochemical azide-alkyne cycloaddition reactions in crystals and organogels

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Topochemical reactions, reactions that occur in crystals and other organized media, are controlled by lattice arrangement of molecules. These solvent-free and catalyst-free reactions are of great interest. There are only a handful of reactions that are amenable to topochemical reactions. We have used different reactions for the topochemical synthesis of several biopolymer mimics.¹ Recently, we have achieved the synthesis of pseudopolypeptides by the Topochemical Azide-Alkyne Cycloaddition (TAAC) reaction of a dipeptide modified with azide and alkyne at its termini.² Gelation, by self-assembly of Low Molecular Weight Gelators (LMWGs), through noncovalent interactions, is another mode of molecular ordering and is closely related crystallization. Pursuing our interests in organogels we have developed a few gelators which can congeal oils and hydrocarbon solvents to give strong and self-supporting gels. We have exploited the self-assembly and orderness in the microstructures of these gels to design gelators that can undergo topochemical reactions even in gel states.³ A few examples of Topochemical reactions in gels and crystals will be discussed.

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[2] Krishnan, B. P.; Rai, R.; Asokan, A.; Sureshan, K. M. (2016). *J. Am. Chem. Soc.*, 138, 14824 & refs cited therein.

[3] Krishnan, B. P. & Sureshan, K. M. (2017). *J. Am. Chem. Soc.*, 2017, 139, 1584 & refs cited therein

Keywords: [Topochemical reactions](#), [Crystal Engineering](#), [Gels](#)