

A Light(er) Approach to Sustainable Solar Fuels: Curious case of Heptazines

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Abstract:

One of the oldest organic moiety reported in the 19th century, Heptazines (tri-*s*-triazines) are one of the forefront moiety in the form of polymeric graphitic carbon nitrides (especially known as g-C₃N₄ or g-CN) today.¹ It attained profound importance after it's application as first organic semiconductor for water splitting to generate hydrogen in the visible light.² From that point there is no looking back, where it was applied in variety of energy and environment related applications. Our group utilised it extensively in synergistic photoredox catalysis to produce solar fuels and fine chemicals in more sustainable way.^{3,4}

Even though, this *s*-heptazine moiety has not been explored much due to it's solubility issues in common organic solvents. After eventual breakthrough in 2002, the basic constituting unit of g-CN, heptazine, has driven scientists to develop various functional materials.^{5,6} Especially our group is involved in various material-designs on synthesizing molecular compounds and heptazine based micro-/mesoporous organic polymers (HMPs) for photoredox catalysis.⁷⁻⁹

References and Notes:

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