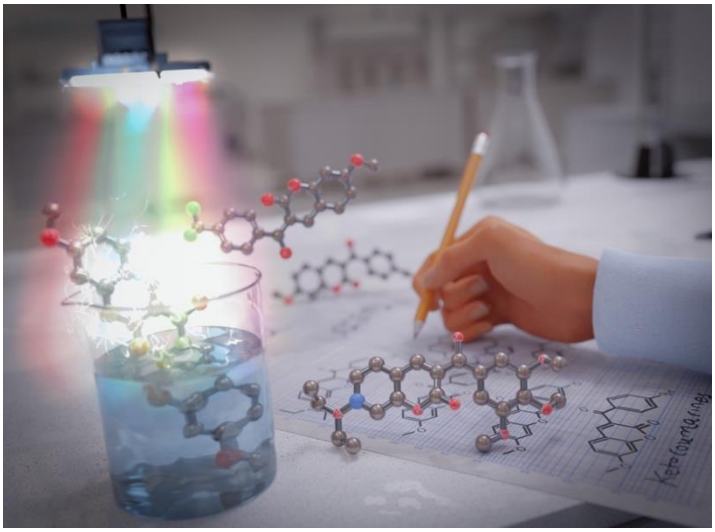
Chemical and functional DYEversity: noble metal-free photosensitizers for light driven hydrogen production

Kalina Peneva

Institute for Organic Chemistry and Macromolecular Chemistry, Friedrich-Schiller University Jena, Germany

The inexpensive cost, earthly abundance, and chemical tunability of organic photoactive materials make them interesting candidates for molecular artificial photosynthetic systems. Our research focuses on the development and synthesis of organic photosensitizers that are photostable, such as perylene monoimides, BODIPY dyes as well as ketocoumarins for use in light-driven hydrogen evolution[1,2]. We will present the synthetic approach we have developed to prepare photostable rylene monoimides that can sensitise $[Mo_3S_{13}]^{2-}$clusters in aqueous solution for hydrogen evolution driven by visible light and demonstrate the remarkable influence of the substituents on the nature of the excited state and its longevity upon excitation by visible light. Furthermore, we will demonstrate how the photocatalytic activity of photosensitizers and catalysts can be greatly enhanced by including them into macromolecular templating agents such as soft matter matrices[3,4].



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