

Abstract for Invited Lecture
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Perylenemonoimide Dyes for Single-component White-Light Emission

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Fluorescent organic nanoparticles assembled from organic polymers, oligomer or small organic molecules have gained immense popularity in recent times.¹⁻² High photostability, colloidal stability, non-blinking nature, high absorption coefficient, non-cytotoxicity, biodegradability and adaptability towards diverse surface functionalization due to high surface to volume ratio keep them ahead of other conventional nanoparticles. Molecular assembly renders fascinating pathways for nanoparticle (NP) formation for various applications.² The easy formulation of NPs in a cost-effective process without any requirement of external stimuli is the desideratum.²

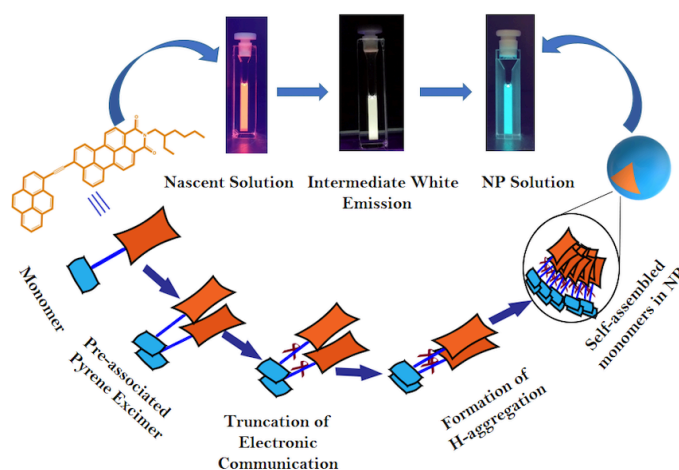


Fig. Different stages of assembly for single-component white-light generation

In this talk, I am going to present the self-assembling process of PMI derivatives for single-component white-light emission.^{3,4} We have reported a unique dynamic self-assembling system embellished with energy transfer, excimer formation, H-aggregation and WL emission at different stages of assembly (Scheme 1). Our study offered an in-depth understanding of the self-assembly process to produce fluorescent cyan NPs and an intermediate single-component WL emitting nano-aggregate with the most desirable chromaticity index of (0.33, 0.33). Easy processibility of these NPs with white-light emitting properties make them promising for optoelectronic applications.

References:

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Bio-Sketch of the Speaker

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Dr. Koner is currently an assistant professor at Indian Institute of Science Education and Research Bhopal. He obtained his B.Sc. in Chemistry with the first rank in 2002 from Visva Bharati, Santiniketan. Then he moved to the Indian Institute of Technology Bombay for master studies and worked on ultrafast excited-state processes in organized assemblies. After completion of his master's degree in chemistry from IIT Bombay, he went to Jacobs University, Germany and obtained another master's degree in Nanomolecular Science in 2006. Later in 2009, he received his doctoral degree on the topic of biomimetic supramolecular chemistry under the guidance of Prof. Werner M. Nau. He worked on different areas in physical organic chemistry. After completion of Ph.D., he started his postdoctoral work on nanobiotechnology at the University of Oxford as a Wellcome Trust postdoctoral researcher from 2009-2010. In 2010, he received a prestigious Human Frontier Postdoctoral fellowship. So far, he has published over 65 research articles in international journals and guided approximately 20 students for their Ph.D. and master thesis. Currently, his lab is working on areas related to physical organic chemistry, biophysics, chemical biology, and bionanotechnology.