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Dumbbell-shaped donor-acceptor material based on Zinc PhthalocyanineJanah Shaya¹, Samir Marzouk^{1, 2}, B Heinrich¹, J E Khiari² and Stéphane Méry¹¹Université de Strasbourg, France²Laboratoire de Recherche Didactique des Sciences Expérimentales et de Chimie Supramoléculaire, Tunisia

Dumbbell-shaped molecules containing large pi-stacking platforms at the molecular termini were found to be of high interest for solution-processable low band gap donor molecules for efficient bulk heterojunction (BHJ) solar cell. Different types of pi-stacking platforms were already reported (e.g., Pyrene, Perylenedimide, Triazatruxene) leading to molecular self-assemblies, ultimately leading to good photovoltaic performances. Metal phthalocyanines are large and functionalizable aromatic platforms which constitute promising pi-stacking units in the design of novel molecules for organic photovoltaic applications. In this line, we have developed a series of dumbbell-shaped molecules, containing Zinc Phthalocyanine as the terminal pi-stacking platforms and a Dithieno benzothienothiophene derivative as the central connecting moiety. In this presentation we will describe the synthesis and characterization of the molecules. It will be shown in particular, that the chains substituted to the Phthalocyanine platforms is of high importance, as the chain density controls the molecular organization and the nature of the linking groups (OR, SR, SO₂R) can be used to control the absorption and energy levels of the molecules.

Biography

Janah Shaya is a Postdoctoral Fellow and Instructor with the CNRS at the IPCMS of Strasbourg (Institut de Physique et Chimie des Matériaux de Strasbourg) in collaboration with Kyushu University, Japan. He had obtained his PhD degree with honor distinction and medal from University of Nice, Sophia Antipolis in France. His work was peer-reviewed and selected for filming for the ACS website at the American Chemical Society in Philadelphia. His principal axes of research are material sciences, biosensors, organic synthesis, photophysics electrochemistry and applications (energy storage systems and CO₂ valorization). He is currently the Co-Editor of two books on carbon dioxide and cross couplings with Interchopen publisher.

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