Functional organometallic complexes for solar cell and photo-electrochemical cell applications

Céline Olivier, Siliu Lyu, Camille Bertrand and Thierry Toupance

1 ISM, Institut des Sciences Moléculaires, Université de Bordeaux.

Julien Massin, Murielle Chavarot-Kerlidou and Vincent Artero

2 LCBM, Laboratoire de Chimie Biologie des Métaux, CEA-Université Grenoble Alpes.

This presentation will give an overview our recent efforts in the design and synthesis of new π-conjugated organometallic complexes as next-generation dyes for photovoltaic and photo-electrochemical applications. In this context we have developed new materials based on functionalized Ru-acetylide complexes that represent extended π-conjugated photoactive systems able to harvest a large part of the solar spectrum due to strong intramolecular charge transfers.

The new dyes were further embedded in different types of hybrid devices such as dye-sensitized solar cells (n-type and p-type DSSCs), dye-sensitized photo-electrochemical cells designed for H₂ evolution from water (DS-PECs) and also in small molecule bulk-heterojunction solar cells (OPV). The attractive optoelectronic properties of the new π-conjugated systems will be highlighted and their performance in the different kind of devices will be presented.

Design of colorful push-pull dyes for DSSCs

New donor material for small molecule BHJ solar cells

References


