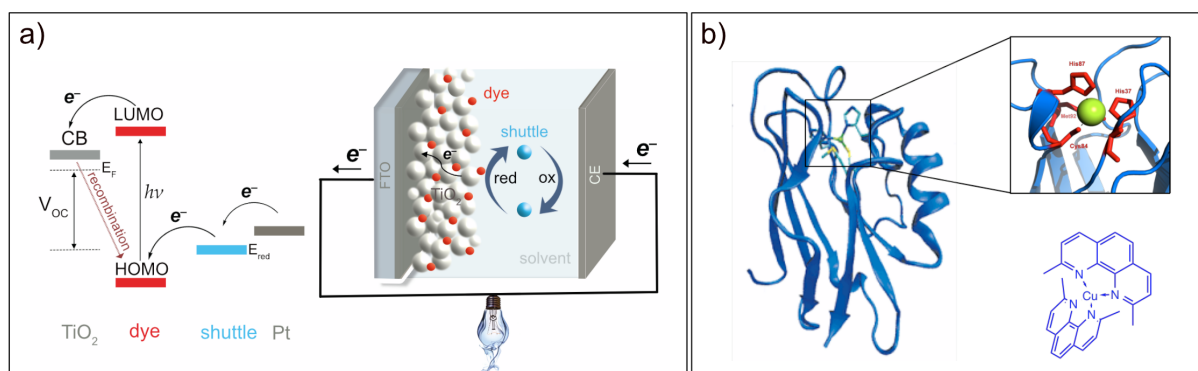

Synthesis and Investigation of a New Generation of Dye-Sensitized Solar Cells

Research Project in the group of Prof. Michael Graetzel
at the Laboratory of Photonics and Interfaces
Under supervision of Dr. Jovana V. Milić

Contact: jovana.milic@epfl.ch

Global energy demands continuously induce environmental risks that impose the requirement for sustainable resources. The most prominent technologies to overcome this impediment are based on light-harvesting or photovoltaics. Over the past decades photovoltaic devices based on organic materials have overcome the performance limitations and reached the industrial production worldwide. In order to further meet the modern performance requirements and manage environmental risks, however, further advancement of light-harvesting technologies is of uttermost importance. Towards this goal, natural systems offer effective solutions that could provide a fruitful ground for further advancement of artificial systems by increasing their stability, flexibility, and performance. The aim of this project is to employ a bioinspired research direction through design and investigation of a new generation of dye-sensitized solar cells. The project will mainly focus on the design and synthesis of dyes and redox shuttles, as well as their characterization in the context of dye-sensitized solar cells. For more details, students are encouraged to contact us.



Schematic representation of (a) a dye-sensitized solar cell and (b) the model of a representative blue copper protein, with its Cu active site and the corresponding artificial redox shuttle

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