

Organic compounds for solar energy conversion technologies: from design to devices

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Research on new organic compounds is essential for the development of efficient technologies for solar energy capture and utilization, in which they may perform various different functions. Over the years, our group has studied the design, synthesis and characterization of many such compounds for use in catalytic, electrochemical and optical sunlight conversion devices, including: light harvesters for solar cells¹ and photochemical H₂ production,² hole-transporting and spacer materials for 2D- and 3D-perovskite solar cells,³ and fluorescent emitters⁴ for luminescent solar concentrators (Fig. 1).

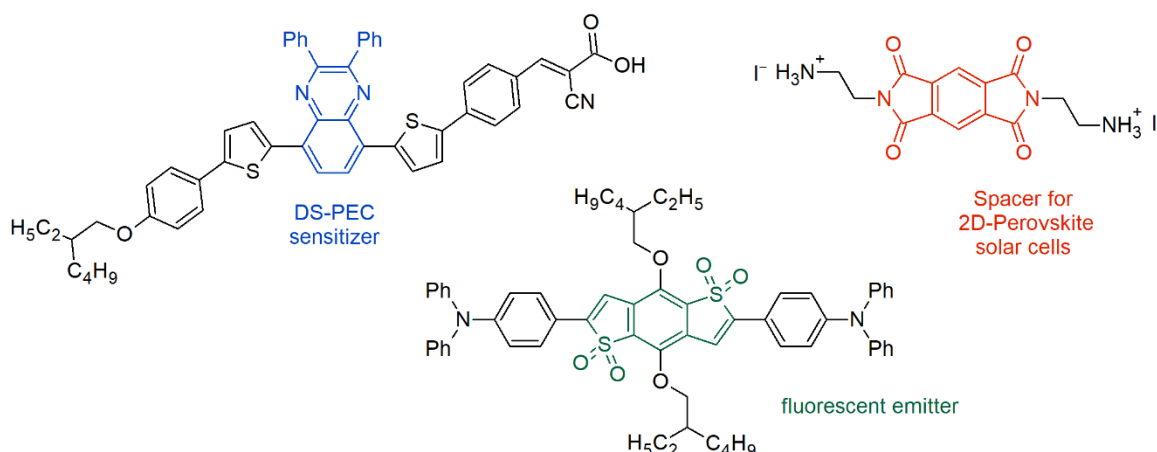


Figure 1. Examples of organic compounds applicable in solar energy conversion devices.

In this communication, we will describe the principles inspiring the design of our compounds, their preparation by means of sustainable synthetic procedures and the characteristics of the corresponding devices, highlighting how molecular properties affect the efficiency of solar energy conversion processes.

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