Special Issue

New Advances in Solar-Driven Reactions for Green Energy Production

Message from the Guest Editors

New (hybrid) heterostructured nanocrystals are attracting huge interest in this field, thanks to their versatility and their ability to be actively involved in the photon absorption process, in the migration and charge separation of the photoexcited carriers, and in the catalytic surface reactions. One of the main advantages of these nanostructured materials is the possibility of tuning their electronic and structural properties through synthesis design, which allows enhancing the catalytic activities occurring at the interfaces between reactants substrate, catalyst, and sensitizer of the "solar-to-chemical" converter device, and to minimize energy losses due to multiple factors, as electron-hole recombination or corrosion/degradation of the components. In this context, the realization of complex architectures composed of new nanomaterials, as well as the understanding of the fundamental photochemistry and photophysics driving the energy transfer are pivotal steps toward the definition of a winning strategy to optimize the performance operation of solar-powered devices.

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Deadline for manuscript submissions

closed (30 September 2022)

Catalysts

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CiteScore 7.6

mdpi.com/si/54410

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