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Coordination Complexes for Dye-Sensitized Solar Cells (DSCs)

Collection Editor:

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Message from the Collection Editor

Dear Colleagues,

The Grätzel dye-sensitized solar cell (DSC) was developed in the 1990s and converts solar into electrical energy. Grätzel's breakthrough use of sintered nanoparticles of the semiconductor has been followed by the development of a myriad of sensitizers. The vast majority of investigations are focused on n-type DSCs. However, much work is still needed to improve the performances of p-type DSCs. State-of-the-art dyes encompass ruthenium complexes, organic and zinc(II) porphyrin-based dyes with the best conversion efficiencies reaching ~11–14%. Copper(I)-based dyes are seen as sustainable alternatives to ruthenium-containing sensitizers and, with the aid of co-sensitization using an organic dye, have been shown to achieve efficiences of up to ~65% that of the benchmark rutheium(II) sensitizer N719. For p-type DSCs, cyclometallated ruthenium dyes show promise, and an emerging family of iridium-containing dyes has recently entered the field. This Topical Collection aims to highlight the variety and importance of coordination complexes as sensitizers in DSCs.

Prof. Dr. Catherine E. Housecroft

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Message from the Editor-in-Chief

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