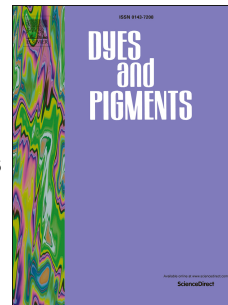


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Pyranylidene/thienothiophene-based organic sensitizers for Dye-Sensitized Solar Cells

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Abstract

Novel push-pull systems featuring a 4*H*-pyranylidene donor fragment and thienothiophene as (part of) π -conjugated spacer have been synthesized in order to test their photovoltaic properties. An analogous derivative with two thiophene rings is also included in the study for comparison purposes. The optical and electrochemical properties of the novel D- π -A molecules have been discussed and DSSCs devices based on these dyes have been characterized. The photovoltaic performance is sensitive to the structural modification of the dye: the *tert*-butyl substituents on the pyranylidene moiety and the hexyl chains of the thienothiophene spacer were shown to improve the efficiency. A maximum power conversion efficiency of 6.41% has been achieved.

Keywords:

Dye-sensitized solar cells, push-pull systems, 4*H*-pyranylidene, thienothiophene.

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