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NEW DYES BASED ON THIENO[3,2-*b*]INDOLE WITH AN EXTENDED π -CONJUGATION SYSTEM FOR DYE-SENSITIZED SOLAR CELLS

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Abstract. Over the past three decades, the technology of dye-sensitized solar cells (DSSCs) has attracted considerable attention due to the broad Aves of its application for the development of high-performance photovoltaic devices.¹

Previously, a series of thieno[3,2-*b*]indole-based dyes (**IS**) was readily synthesized in three steps from 2-(thien-2-yl)thieno[3,2-*b*]indole as the key precursor, and further applied as photosensitizers for dye-sensitized solar cells.²

Herein, we wish to present the modified series of dyes **IS**, containing thieno[3,2-*b*]indole as an electron-donating part, oligothiophene units as a π -conjugated bridge and cyanoacrylic acid as an acceptor-anchoring group, respectively (Figure 1).

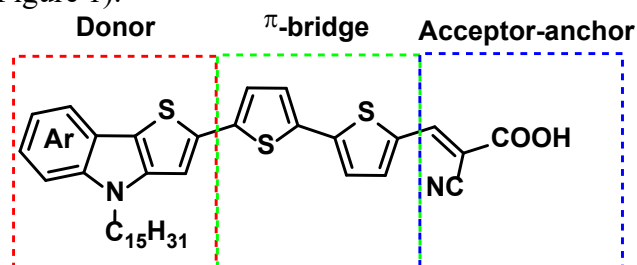


Figure 1. Modified series of dyes **IS**.

We have studied the optical and electrochemical properties of synthesized dyes, as well as considered their application for the fabrication of DSSCs. The influence of the dye's composition and structure on the power conversion efficiency of DSSC devices was determined. Also, additional studies, including temperature dependence of photovoltaic properties, were carried out for these modified series of dyes **IS**.

References

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