

Benzo[ghi]perylene triimide Derivatives: New Non-Fullerene Electron Acceptors For Photovoltaics

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ABSTRACT

Benzo[ghi]peryleneimides constitute a unique class of fluorescent perylene dyes which possesses great synthetic diversity due to the presence of a large number of reactive active sites (availability of third imide region). Taking advantage of this additional active site we synthesized a new series of benzo[ghi]perylene triimides comprised of alkyl- and aryl- substituents in the third imide region. The core extension of perylene diimides was performed using a Diels-Alder reaction to afford diimido anhydride which provided access to the various triimides with yields ranging from 58%–69%. The combined spectroscopic and electrochemical studies revealed strong electron accepting properties of the triimides. Potential application of the synthesized triimides for various optoelectronic devices and as non-fullerene electron acceptors in photovoltaics is evident from this study.

Biography

Dr. Lakshmi C. Kasi Viswanath is currently working as an assistant professor at Oklahoma Baptist University. Her research focus lies on supramolecules, development of donor acceptor conjugates for organic solar cells and light harvesting systems. She has published many articles in international journals including a book chapter. She also serves as a reviewer for reputed journals and also a member of editorial board. She actively participates in ACS conferences.