1. Record Nr. UNINA9911020264703321

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Titolo	Handbook of thiophene-based materials / / Igor F. Perepichka, Dmitrii F. Perepichka
Pubbl/distr/stampa	Hoboken, : Wiley, 2009
ISBN	9786612349508 9781282349506 1282349503 9780470745533 0470745533 9780470745540 0470745541
Descrizione fisica	1 online resource (887 p.)
Altri autori (Persone)	PerepichkaDmitrii F
Disciplina	661.8 661/.8
Soggetti	Thiophenes - Electric properties Conjugated polymers Organic compounds - Synthesis
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record. Print version published in 2-volume set.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Handbook of Thiophene-based Materials; Contents; Volume One: Synthesis and Theory; Volume Two: Properties and Applications; Foreword by Professor Fred Wudl; Preface; List of Contributors; 1 Functional oligothiophene-based materials: nanoarchitectures and applications; 1.1 Introduction; 1.2 Functionalized oligothiophenes; 1.2.1 Oligothiophenes containing surface-active groups; 1.2.2 Self-assembling hybrid oligothiophenes; 1.2.3 Oligothiophenes as pendant groups grafted to polymer backbones; 1.2.4 Oligothiophenes as liquid crystalline materials; 1.2.5 -Dimeric model system 1.2.6 Donor, acceptor and donor-acceptor (D-A) mixed systems1.2.7 Dye-functionalized oligothiophenes; 1.2.8 Oligothiophenes containing redox active groups; 1.2.9 Oligothiophenes containing recognition

groups; 1.2.10 Biologically active oligothiophenes; 1.3 Fused thiophenes; 1.3.1 Benzothiophene analogues; 1.3.2 Heteroaromatic ring-fused oligothiophenes; 1.3.3 Thienothiophenes and higher homologues; 1.4 Macrocyclic thiophenes; 1.4.1 Macrocycles based only on thiophenes; 1.4.2 Mixed macrocycles based on thiophenes and other unsaturated units; 1.4.3 Thiophene-based porphyrinoid macrocycles
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2.3 Synthesis of regioregular polythiophenes2.3.1 Survey of regioregular syntheses; 2.3.2 Mechanism of nickel-mediated cross-coupling polymerization; 2.3.3 Polymer modification: chain and termini; 2.3.4 Polymer modification: substituent; 2.4 Purification and fractionation; 2.5 Molecular characterization; 2.5.1 NMR spectroscopy; 2.5.2 UV-Vis spectroscopy; 2.5.3 MALDI-TOF-MS; 2.5.4 Light scattering studies of aggregates; 2.6 Solid-state studies; 2.6.1 Solid-state NMR spectroscopy; 2.6.2 Solid-state UV-Vis spectroscopy; 2.6.3 Solid-state vibrational spectroscopy (IR, Raman)
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4 Thiophene-S,S-dioxides as a class of electron-deficient materials for electronics and photonics

Sommario/riassunto

This essential resource consists of a series of critical reviews written by leading scientists, summarising the progress in the field of conjugated thiophene materials. It is an application-oriented book, giving a chemists' point of view on the state-of-art and perspectives of the field. While presenting a comprehensive coverage of thiophene-based materials and related applications, the aim is to show how the rational molecular design of materials can bring a new breadth to known device applications or even aid the development of novel application concepts. The main topics covered include synthetic methodologies to thiophene-based materials (including the chemistry of thiophene, preparation of oligomers and polymerisation approaches) and the structure and physical properties of oligo- and polythiophenes (discussion of structural effects on electronic and optical properties). Part of the book is devoted to the optical and semiconducting properties of conjugated thiophene materials for electronics and photonics, and the role of thiophene-based materials in nanotechnology.