

TECHNOLOGY OPPORTUNITY

Versatile synthesis method to better performing conductive polymer building blocks

INTRODUCTION

Organic conducting or semi-conducting polymers are highly interesting materials for applications as photovoltaic cells, photodetectors, ... Now a method is proposed to enhance the properties of the polymers by specific modifications of the monomer building block.

TECHNOLOGY

The proposed technology encompasses a way to make new monomers based on the cyclopentadithiophene (CPDT) structure, a popular rigid precursor for polymeric (semi)conducting materials. Through a robust 3-step synthesis a 4,4'-disubstituted CPDT monomer can be prepared with either symmetrical or asymmetrical substitution. This protocol enables the production of a wide range of materials and delivers the opportunity to finetune properties of the material as active layer in device structures.

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APPLICATIONS

Possible applications for the materials based on the CPDT-building block are a.o. sensor systems, electrochromic polymers, electrochemically controlled delivery systems.

ADVANTAGES

- Robust and straightforward procedure in 3-steps
- CPDTs serve as a validated building block for conductive polymers
- Possibility to make a wide range of CPDTs, which enables tuning of the properties of the resulting polymer material
- Proven effect on stability of material

STATUS OF DEVELOPMENT

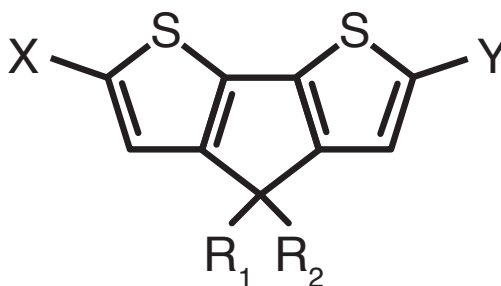
The synthesis of the monomer was validated in the lab, more than 10 different examples were synthesized. The syntheses were performed up to a level of 1 grams per monomer.

PARTNERSHIP

We are looking for a partner that is interested in exclusive rights on the synthesis method, and/or wants to collaborate on the development of new types of conductive polymer materials.

INTELLECTUAL PROPERTY

The technology is subject to granted patents in US (US8329923B2), EP (EP2397475B1) and JP (JP5687912B2). The technology was developed at imo-imomec, a joint research institute of Hasselt University and imec, who have co-ownership.

FIGURE**INVENTORS, REFERENCES**

The technology was invented by Prof. dr. Dirk Vanderzande, Dr. Laurence Lutsen and Dr. Sarah Van Mierloo.

More information is available in these publications:

Vanderzande et al. J. Org. Chem. 2010, 75, 7202-7209
Maes et al. Chem. Mater., 2015, 27, 1332-1341

BUSINESS DEVELOPER

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