TECHNOLOGY OFFER

Green synthesis of polymers for organic electronics

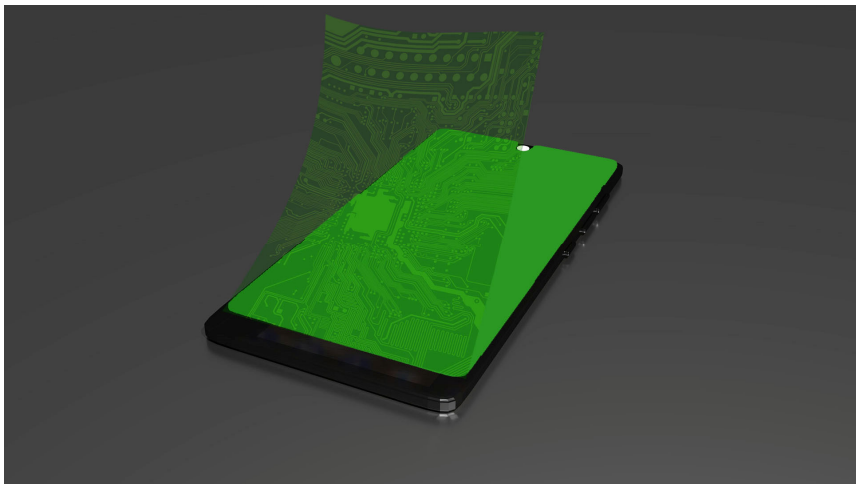
A new, environmentally friendly process for the synthesis of benzimidazobenzophenanthroline polymers has been developed. The underlying technique, hydrothermal polymerization (HTP), is inspired by natural mineral formation processes in hot subterranean aquifers in the Earth's crust. HTP only requires high-temperature water and the desired monomers. Neither organic catalysts nor solvents are necessary.

Background

High-performance polymers are polymer materials of outstanding chemical resistivity, i.e. resistance against numerous chemicals, thermal stability, and mechanical performance. Benzimidazobenzophenanthroline polymers show a high level of electron delocalization, and are therefore of great interest for applications in organic electronics, including organic solar cells and organic field-effect transistors. Unfortunately, until now these high-performance polymers came at the high cost of toxic and environmentally detrimental production processes, involving high-boiling, toxic and expensive solvents and catalysts and long reaction times.

Technology

Inspired by the process of geological mineral formation, a new method, hydrothermal polymerization (HTP), has been developed to generate benzimidazobenzophenanthroline polymers. HTP does not require toxic solvents, catalysts or byproducts, but solely uses high-temperature water and the desired monomers. Thus, in contrast to conventional production processes, HTP provides a green route to these outstanding polymers.



Benefits

- Green production process without the need for harmful solvents or discharge of toxic byproducts.
- Applicable to a wide range of monomers.

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REFERENCE
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POTENTIAL APPLICATIONS
Organic electronics, eg. in field-effect transistors or photovoltaics

KEYWORDS
high-performance polymers, benzimidazobenzo phenanthroline polymers, hydrothermal polymerization, green synthesis

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