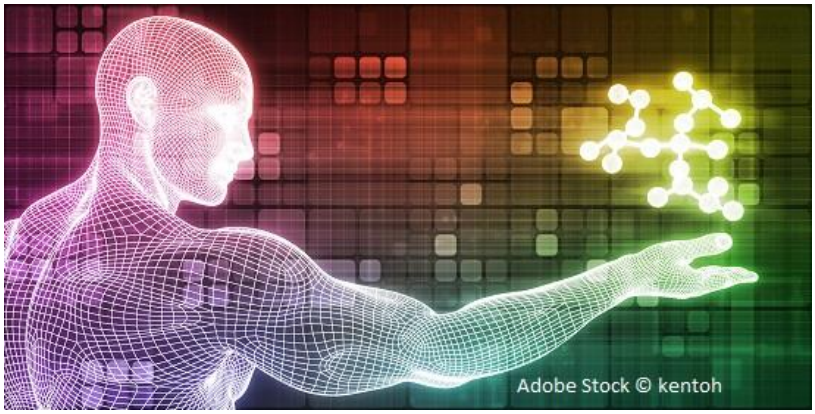
Chemical Synthesis – a new and versatile way to multifunctional [cd,lm]-annellated Perylenes and their Homlogues

Chemical Synthesis, Perylenes, Pyrenes, Organic electronics, Organic dyes, fluorescent Materials, organic field-effect transistors (OFETs), organic light emitting diodes (OLEDs)

DESCRIPTION OF TECHNOLOGY

Pyrenes and perylenes are well known organic materials with interesting electronic characteristics, e.g. fluorescence, electrical conductivity etc., which make them to be highly intersting compunds for the development of organic electronics. Especially for their application in the field of organic electronics, but also for tailoring their fluorescence-characteristics, it is necessary to have convenient access to multifunctionalized compounds.



The method presented here for producing multifunctional Pyrenes, Perylenes and other homologue compounds provides a very flexible and effective route to tetrafunctionalized Perylenes and Pyrenes, allowing them to be substituted with numerous different substituents for further tailoring the compounds, adjusting them to the intended use. For example, the basic compounds may be functionalized in such a way that they may be polymerized, forming conjugated polymeric structures, suitable to be used as „organic electrical wires“ or other organic electrical components.

AT A GLANCE …

Application Fields

- Organic electronics
- Organic dyes and pigemts

Business

- Manufacturers of chemical compounds
- Chemical Industry

USP

- Extremely versatile and flexible way of manufacturing tetrafunctionalized Pyrenes, Perylenes and higher homologues.

Development Status

- Laboratory scale synthesis is established

Patent Status

PCT-application pending (WO 2019/229134 A1), claiming the priority of an earlier EP-application, filed on May 30th 2018.

REFERENCE NO. **TM 1026**

APPLICATION FIELDS

Possible fields of application are primarily the vast emerging field of organic electronics, e.g. as materials for organic electrical wires, organic field-effect transistors or organic light emitting diodes (OLEDs), due to their fluorescent characteristics which may be easily „fine tuned“ via substitution according to the current method).
Of course, the compounds, easily being manufactured by the method described below, may also be used as organic dyes, respectively pigments as is their already long-time established usage.

ADVANTAGES OVER THE PRIOR ART

The production method for the multifunctional pyrenes, perylenes and their homolgues containes as critical step the usage of the corresponding tosylates, triflates, nonaflates etc. as reactive intermediates, which was unknown before within this class of condensed polyaromatic systems.
By doing so the presented synthetic route gains a huge amount of flexibility and ease of modification which was unknown in perylene- resp. pyrene-chemistry before.

STATE OF THE PRODUCT DEVELOPMENT

Currently the multifunctional pyrenes and perylenes (as model-substances) are being synthesized on laboratory scale.

MARKET POTENTIAL

Organic electronics is one of the major areas in current electronic developments in science and industry. The market potential for this method of manufacturing universely applicable building blocks for organic electronics is considered to be quite high.

COOPERATION OPPORTUNITIES

On behalf of its shareholder Philipps-Universität Marburg TransMIT GmbH is looking for licensees or cooperation partners for further development in the US, Asia or Europe.

A TECHNOLOGY OF

Philipps Universität Marburg

Contact

TransMIT Gesellschaft
für Technologietransfer mbH
Kerkrader Straße 3
35394 Gießen
GERMANY
www.transmit.de

Contact Person

Dr. Andreas Fuß
Tel: +49 (0) 641 9 43 64 58
Fax: +49 (0) 641 9 43 64 55
E-Mail: andreas.fuss@transmit.de

TransMIT
Gesellschaft für
Technologietransfer mbH

SYSTEM PARTNER FOR INNOVATION