

Vortragsankündigung

16. Mai 2017, 16:00 s.t., Hörsaal TS T02 (COWI), Jakob-Haringer-Straße 2

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Planar Photoelectrochemical Cells Fabricated By Inkjet Printing: Design, Fabrication And Properties

A novel concept of a planar all-printed photoelectrochemical cell is introduced. The cells, consisting of a nanoparticulate titania photoanode and an planar cathode integrated on the same substrate, were fabricated by a strictly additive process employing material printing as the exclusive deposition and patterning tool. Transparent conductive oxide coated glass and polyethyleneterephthalate sheets were used as substrates; nanocrystalline titania dispersion bonded by a novel organosilica binder was used for the fabrication of the photoanode and gold or carbon inks for the fabrication of the digitated cathodes. Due to the digitated shaping of the cathode, photoelectrochemical response was not suffering from iR drop down to low electrolyte ionic strengths and the printed cells were successfully employed for electroassisted photocatalytic degradation experiments with aqueous solutions of diluted aqueous pollutants.

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Printed UV And Visible Light Dosimeters

The primary aim of research comprises design and development of special advanced sensors for independent monitoring of the time variable by means of visually well detectable colour change. The sensing elements are completed on the basis of photochemical and photocatalytic principles with additional parts. The principles and properties of these dosimeters will be presented. Such dosimeters can be designed and manufactured as a simple adhesive strip, wristband, self-supported card etc., or merely a control patch printed on a foil for packaging. Coating of such composition on plastic foil was realized by a doctor blade film applicator, later by printing. The printing process with slot-die technique was realized in roll-to-roll material printer and pre-production prototypes are available from the authors.