

## Implementation of Flexible Embedded Nanowire Electrodes in Organic Light - Emitting Diodes

Researchers in the HySPRINT joint lab Generative manufacturing processes for hybrid components (GenFab) of Humboldt-Universität zu Berlin (HU) and Helmholtz-Zentrum Berlin (HZB) have developed together with the Austrian Institute of Technology (AIT) a method to produce flexible transparent electrodes based on silver nanowires. Specifically, the nanowires are spray coated and embedded within a polymer resin on top of polyethylene terephthalate (PET) substrate. Not only are the electrodes fabricated using solution-based approaches, but compared with the widely used indium tin oxide (ITO), the electrodes show higher stability in mechanical bending tests. "Since the spray coating approach in this work can be upscaled to larger areas", says Dr. Felix Hermerschmidt, senior researcher in the joint lab of HU and HZB, "this mechanical stability can be translated to an industrial process."

The researchers fabricated organic light-emitting diodes employing the developed ITO - free nanowire electrodes. These show considerably higher luminance values at the same efficacy compared to their ITO - based counterparts. As Dr. Theodoros Dimopoulos, senior scientist at AIT, points out, "Replacing ITO in optoelectronic devices is a key area of research and this work shows the possibilities of doing so without loss in performance."

The work has been published in *physica status solidi rapid research letters* and is featured on the cover of the November 2020 issue of the journal.

GenFab, led by IRIS Adlershof member Prof. List-Kratochvil, is moving in laboratory rooms in the new IRIS-research building for further development.

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