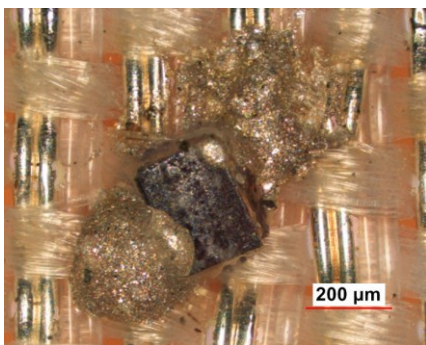


+++++++ Light-Emitting Textiles ++++++

TexOLED: Textile-Integrated and Textile-Based LEDs and OLEDs



Bare die LED contacted to fabric with machine jetted isotropic conductive adhesive (ICA)



Blinking lights on fabric matrix

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Background

TexOLED is a three-year research project started in March 2007. It is funded by the Fed. German Ministry of Education & Research and coordinated by VDI/VDE-IT. All partners are research institutes as the project focuses on feasibility. An industrial board of advisors controls the project progress. The members are: BASF, Leuchtstoffwerke Breitung, Interactive Wear, BEDEA, fiberware, TU Mittweida, EADS (Luft- u. Raumfahrttechnik), Drägerwerk, Daimler and TU Darmstadt.

Goal

The goal of TexOLED is to incorporate lighting into textiles. Different approaches are currently being investigated and developed. Fraunhofer IZM focuses on integrating bare die LEDs into fabrics, which are partly provided by TITV. Fraunhofer IAP together with TITV develops a chemical process for coating fibers with OLED layers.

STFI investigates textile technologies for coupling light into polymer optical fibers.

Realization

The here shown images present some early results of Fraunhofer IZM's work in the project.

Adhesive bonding is one approach they take to integrate bare die LEDs into textiles (bare die: cut from wafer and without housing). Conductive adhesive is jetted onto the fabric at a right angle close to the LED. While the droplet is still in air its horizontal dimension is small. Hence, it passes the LED without touching. As it hits the fabric it flattens making it touch the LED's electrode. At the same time it contacts the conductor in the fabric. The high viscosity keeps the adhesive in place until it is cured.

Further on, IZM will investigate how to protect the LED and its interconnections from environmental stresses, e.g. during washing.

