Light based techniques for deposition and sintering of silver nanowires based electrodes
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Introduction
Traditional solar panels exist from rigid and expensive materials. By making these photovoltaics applications from cheaper organic materials, which are also flexible, production and material costs can be reduced. This poster looks further into the transparent interconnects for solar panels, and shows that silver nanowires based materials can be applied by Laser induced forward transferring, how this this technique can be characterized and improved by photon sintering.

LIFT of nanowire based materials
LIFT is a print technique, which uses the explosion of the dynamic release layer to transfer the material. An explosion is induced by the ablation of the DRL, this whole process is shown schematically in figure 1. The material transfer is photographed by a Schlieren setup, shown in figure 2, which visualize both the transferred material and the shockwave from the explosion. With this complete setup different LIFT condition can be compared with each other, and makes it possible to characterize LIFT.

The silvernanowires are hold together by a matrix material. In this case two different material combination, wires with the HENKEL polymer and with PEDOT:PSS, are both successfully LIFT. Figures 3 and 4 show a simple electrode based on these materials.

A post treatment by photon sintering enhance the electrodes properties even further, better than common used ITO.

Characterizing of LIFT
The photographs from the LIFT process shows the transfer with a shockwave travelling in the front and a reflecting against the acceptor, as is shown in figure 5.

Because the shockwave are traveling through normal air, the released energy can be calculated by the next scaling formula.

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\frac{(\text{actual distance}) \cdot (\text{atmospheric density})^{\frac{1}{2}}}{(\text{energy release})^{\frac{1}{2}}} = (\text{scaled distance})
\]

By analyze all the picture is the energy absorption by the donor material determined for different DRL thickness and laser fluence, these results are shown in figure 6.