Lehrstühle und Professuren

Dokumenttyp: Zeitschriftenaufsatz
Titel des Beitrags: Solution-processing of Copper Nanowires for Transparent Heaters and Thermo-Acoustic Loudspeakers
Abstract: In this study, we present a copper nanowires (CuNWs) based spray deposition process for the fabrication of transparent heaters and thermo-acoustic loudspeakers. We developed a scalable and solution-based synthesis process for CuNWs, which allows to fabricate spray deposited transparent electrodes (TEs) that show performances comparable to indium tin oxide (ITO) based TEs, at much lower material and deposition costs. Without any post-processing, the CuNWs films exhibit a sheet resistance as low as 12.6 $\Omega$ at a high transparency of 77 %. CuNW-based transparent heaters and thermo-acoustic loudspeakers are accurately characterized and modelled in both the thermal and the acoustic domain, showing performances aligned with the state-of-the art.
Stichworte: Copper nanowires, CuNWs, Transparent electrodes, Solution-based, Heaters, Thermo-Acoustic, Speakers, Transient response, Crank-Nicolson method
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