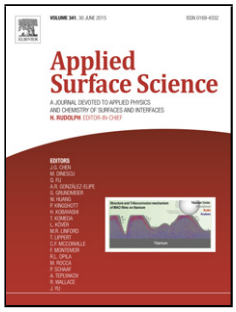

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Investigations on laser printing of microcapacitors using *poly (methyl methacrylate)* dielectric thin films for organic electronics applications

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Abstract

Thin solid pixels made of *Ag/PMMA* stacks have been fabricated by laser-induced forward transfer (LIFT), to be tested as thin film microcapacitors in organic electronics applications. The square-shaped laser-printed pixels have a lateral size of ~350 µm, and the thickness of the dielectric film was varied between 100 and 1500 nm. The pixels were deposited on electrode structures made by LIFT printing of silver nanoparticles ink and paste. Optimal printing conditions led to the fabrication of microcapacitors with typical capacitance in the *pF* range, tuned by changing the properties of the multilayered structure (*e.g.* pixel size and/or thickness of the dielectric). Their stability was also investigated over time. We discuss on the morphological and electrical properties of such laser-printed structures, with respect to the impact resistance of the polymer and its suitability for the LIFT process.

Keywords: LIFT, laser processing, picosecond, PMMA, organic dielectric, microcapacitor, silver nanoparticles, thin film.

Highlights

- Laser-induced transfer is used for the printing of multilayered microcapacitors
- The dielectric film is made of *PMMA*, and the electrodes are made of *Ag*
- We discuss on the properties of the polymer vs. the LIFT printing
- The structure and electrical properties of the capacitors are emphasized

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