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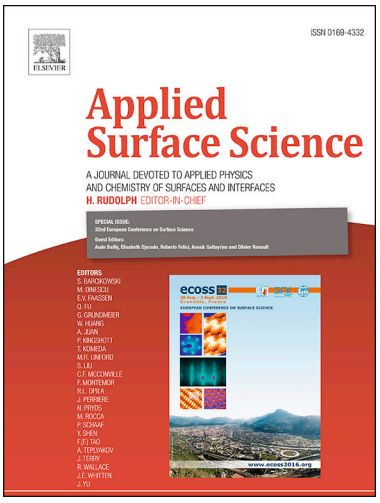

Full Length Article

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Three-dimensional characterization of OTFT on modified hydrophobic flexible polymeric substrate by low energy Cs^+ ion sputtering

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Highlights

- Low energy cesium ion sputtering has been used in *dual beam* ToF-SIMS depth profiling experiments on non-passivated flexible OTFTs.
- We have successfully characterized in a single run two hybrid interfaces (organic/metal and metal/organic).
- The hydrophobic treatment has been detected and mapped in the multilayer structure.
- Multivariate analysis applied to 3D ToF-SIMS datasets is a useful tool to obtain information about the number of layers, additional chemical treatments, and related characteristic molecular fragment ions.

Abstract

Here, electron-transporting semiconducting organic channels made of N,N′-1H, 1H-perfluorobutyl dicyanoperylenecarboxydiimmide (PDIF-CN_2) molecules were thermally evaporated on flexible polyethylene-naphtalate (PEN) plastic substrates equipped with gold (Au) electrodes. This multilayer structure represents the basic component for the fabrication of staggered top-gate n-type organic thin-film transistors (OTFTs) to be completed with the addition of a polymeric dielectric layer and an aluminum gate electrode. PEN substrate was treated with hexamethyldisilazane (HMDS) in order to