

## Cost-Effective Soft Lithography of Organic Semiconductors in Organic Field-Effect Transistors (OFETs)

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**Abstract :** We demonstrate repurposing linear micropatterns on the CD as a master mold to fabricate TIPS-PEN microwires. From the micropatterns on CDs, we replicated polyurethane acrylate (PUA) templates which are robust and flexible until submicrometer scale patterns. Subsequently, 1.5  $\mu\text{m}$  TIPS-PEN microwires separated by 1.5  $\mu\text{m}$  were grown. Using crystal analysis tools with polarized optical microscopy and X-ray diffraction measurement, it was revealed that each TIPS-PEN microwires are highly crystalline and uniform compared to spin-coated films. It is attributed to the template-guided growth of TIPS-PEN crystals along the linear template, thus the OFETs comprised of TIPS-PEN microwires displayed the high field-effect mobility.

**Keywords :** compact disk, macro patterning, OFET, soft lithography

**Conference Title :** ICN 2017 : International Conference on Nanotechnology

**Conference Location :** Singapore, Singapore

**Conference Dates :** March 29-30, 2017