ISTITUTO ITALIANO DI TECNOLOGIA
PRINTED AND MOLECULAR ELECTRONICS

Master Thesis 2021 - 2022

POLITECNICO MILANO 1863

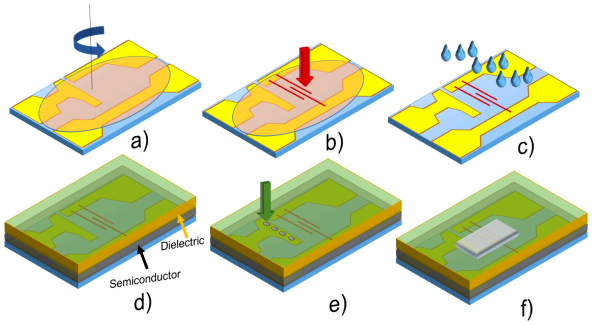
High Frequency Solution-based Organic Field-effect Transistors characterized by means of S-parameters

Organic electronics has the potential to be a promising technology in the future for many application-fields, ranging from health-care to distributed-sensing and monitoring tanks to its compatibility with large-area low-cost fabrication processes and its intrinsic flexibility and conformability, unlike well-establish silicon based technology. This makes it appealing for Internet of Things where an extended network of many electronic devices are communicating each other and exchanging information via warless communication.

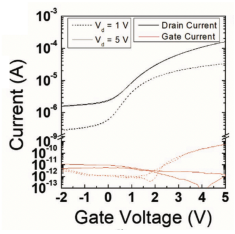
Thesis work:

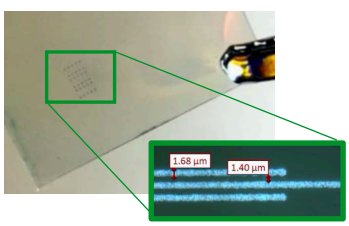
- All-step fabrication of high performing organic-based electronic devices with low-cost scalable large area processes, such as ink-jet printing and laser sintering.
- Quasi-static electrical characterization (transfer/out-put characteristic curves and parameters extraction).
- **Frequency behaviour characterization by means of two-port Scattering Parameters with careful attention in parameter extraction and understanding of device relevant contributions.**

Direct written high resolution OFET by laser sintering

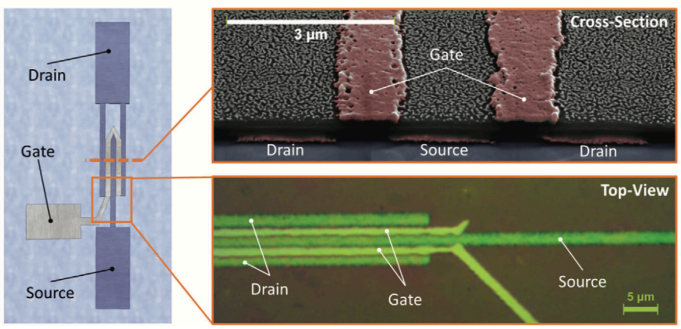


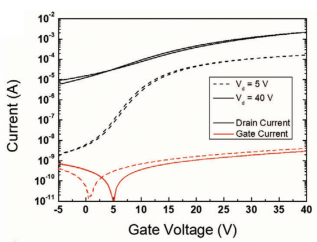
Low voltage MHz operation on plastic for IoT

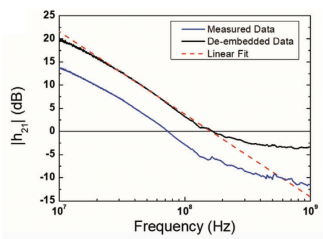




Accessing 160MHz with organic semiconductors: world record







Contact informations
Dr. Mario Caironi (mario.caironi@iit.it)
PhD student Tommaso Losi (tommaso.losi@iit.it)