

Flexible & Wearable Electronics Application Experiments



Inuru is a technology and advanced materials company focused on the development, production and implementation of OLED and OLED enabled visual functionalities into products. Inuru's main field of activity today is in the field of active and smart packaging.

www.inuru.com



Problem to be solved

Implementation of Organic Light Emitting Devices (OLED) is an attractive objective in many consumer-oriented industrial sectors, such as packaging and logistics, targeting consumer attraction, while causing low environmental impact and a potential high compatibility to conventional packaging processes. Nevertheless, an important component of OLED, the conventional transparent electrode material ITO (Indium-tin-oxide) suffers from complex supply chains, the usage of rare earth material Indium and brittleness for flexible applications. Although there are already working replacement solutions on the market that are used for flexible OPV's, their application in OLEDs is not possible. For example printed grid structures on transparent conductive PEDOT:PSS require light blocking elements (silver grids) in the active area. Those features are necessary to enhance electrical parameters which might be an acceptable trade-off in OPVs but the optical appearance of OLED products is of utmost importance and hence such solutions cannot be utilized as transparent OLED electrodes in the smart packaging sector.

Solution provided by SmartEEs

Manufacturing of OLEDs and testing if the printed transparent silver electrodes provided by partner OreITech can work in industrial OLEDs as ITO replacement to reduce its overall environmental impact while maintaining comparable electrical performance. Furthermore, it was tested if the highly reflective opaque printed silver electrodes from OreITech could work as opaque electrodes in top emitting OLEDs. Based on the opaque (reflective) samples, the project successfully fabricated OLEDs and integrated OreITech's technology.

Business model & impact

The packaging market for retail is a huge market. Weighting 910B\$ in 2019 and expected to achieve 1 050B\$ in 2024. It's a growing market, moving quickly and deeply connected to customers' expectations. And in the same time, brands are always in competition to find disrupting solutions. INURU aims to become the reference in their domain. They want to make their product not anymore limited to small volume edition packaging or seasonal packaging. They dream of standard packaging that will be personalized by their OLED screen.

