



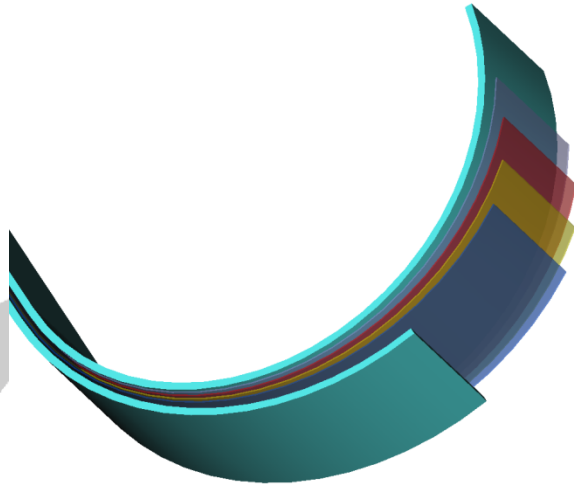
High-priority product: Flexible screens

Designation of multi-material multi-functional product:	<i>Light-emitting electrochemical cells (LEC)</i>
General description of product (3 – 4 sentences):	<i>Solution-based processing of light-emitting devices. Using our proprietary spray-sintering technology, we can create light on a large variety of substrates such as paper and plastics, including 3D surfaces. The entire fabrication can be made in air, and does not require clean rooms.</i>
Multi-materials needed/required:	<i>LECs require solution-processable conductive materials. Ideally, highly reflective or transparent electrodes should be used to increase light output. We also require high quality organic semiconductors, which we use to convert electricity to light. Finally, we need barrier materials, to protect the device from oxygen and water during operation.</i>
Multi-functionality needed/required:	<i>Ideally, electrode materials and barrier materials should be combined. Getter functionality could be incorporated as well, to increase shelf life by consuming water and oxygen entering the device structure. Barriers that incorporate light-outcoupling structures would be of great value.</i>
Expected improvement:	<i>We expect to increase efficacy and reach similar levels as currently achieved with fluorescent lamps. We also expect to decrease production cost, and aims at having a price tag of 0.1 €/cm².</i>
Bottlenecks to overcome for reaching the expected improvement	<i>We need to develop a roll-to-roll alternative, and realize a product so that we can start large scale fabrication. This will allow us to lower material costs through higher demand and realize the low-cost fabrication method we advertise.</i>
Functional requirements:	<i>Using our deposition technique, surface requirements are relaxed. We do however depend on barriers of high quality (typ. <math>1e-4\text{ g/m}^2/24\text{h}</math>) and electrodes of sufficiently high conductivity (<math><100\text{ Ohm/sq}</math>).</i>



Advanced Manufacturing of Multi-
Material Multi-Functional Products
Towards 2020 and Beyond

Technical sketch of product
(if applicable):



2020