



An experimentally-validated multi-scale materials, process and device modelling & design platform enabling non-expert access to open innovation in the Organic and Large Area Electronics Industry (MUSICODE)

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Deliverable author(s): S. R. P. Silva, University of Surrey (USUR)

Contributors (only the lead contacts during the preparation of this document are identified herein)

| Name | Organization |
|-----------------|--------------|
| D. I. Kutsarov | USUR |
| Ch. Kapnopoulos | AUTh |
| M. Chatzidis | AUTh |
| E. Mekeridis | OET |
| S. Jenatsch | Fluxim |
| P. K. Baumann | APEVA |

Reviewed by the Coordinator: 30/12/2021

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| | | |
|----------------------------|---|-------------|
| Consisting of Coordinator: | University of Ioannina (Uoi) | Greece |
| Partners: | Karlsruhe Institute of Technology (KIT) | Germany |
| | University of Surrey (SURREY) | UK |
| | Aristotle University of Thessaloniki (AUTh) | Greece |
| | Czech Technical University in Prague (CVUT) | Czechia |
| | Fluxim AG (FLUXIM) | Switzerland |
| | TinniT Technologies GmbH (TINNIT) | Germany |
| | Granta design LTD (GRANTA) | UK |
| | Esteco SPA (ESTECO) | Italy |
| | Organic Electronic Technologies (OET) | Greece |
| | Apeva SE (APEVA) | Germany |

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Glossary

| | |
|------|--|
| AFM | Atomic Force Microscopy |
| Ag | Silver |
| Al | Aluminium |
| AOI | Area of Interest |
| Ca | Calcium |
| DIT | Dark-Injection Transient |
| EOD | Electron Only Devices |
| ETL | Electron Transport Layer |
| FF | Fill Factor |
| HOD | Hole Only Devices |
| HTL | Hole Transport Layer |
| IMI | Indium Metal Indium (an ITO alternative) |
| ITO | Indium Tin Oxide |
| Jsc | Short Circuit Current |
| NFA | Non-Fullerene Acceptor |
| NW | Nano Wire |
| OE | Opto-Electronic |
| OLED | Organic Light Emitting Diode |
| OPV | Organic Photovoltaic |
| OVPD | Organic Vapor Phase Deposition |
| PAL | Photoactive Layer |
| PCE | Power Conversion Efficiency |
| PCE | Power Conversion Efficiency |
| PET | Polyethylene Terehthalane |
| PL | Photoluminescence |
| PPV | Perovskite Photovoltaic |
| R2R | Roll-To-Rolle |
| SCLC | Space-Charge-Limited-Current |
| SE | Spectroscopic Ellipsometry |
| Voc | Open Circuit Voltage |
| WP | Work Package |

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Publishable summary

This document reports the work carried out in Task 3.1 “Fabrication of test opto-electronic (OE) materials and devices (M1-12)” under the WP3 “Model validation by analytical characterization (M1-M36)”. WP3 conducts experimental tests and characterization to validate the models of WP2. Task 3.1 focuses on the fabrication of these test OE materials and devices. To facilitate a roadmap for this, all partners collaborated during the first months of the project in WP1 Task 1.1 to specify the OE materials and devices needed, and the processes to be used for fabricating them.

This report shows the experimental work undertaken so far in Task 3.1. Small organic photovoltaic devices (OPV) with photoactive areas below 1 cm^2 were fabricated. The devices were manufactured by different partners. Some devices were fabricated using the spin-coating technique in conjunction with vacuum deposition, whereas others were fully solution processed. Single carrier devices were also fabricated by different partners using the fabrication techniques above. These devices were used to measure the charge carrier mobilities of pure donor materials (hole only devices, HOD), leading to the collection of first set of data. Also, the first opto-electronic (OE) layers were deposited by means of organic vapor phase deposition (OVPD). These layers were characterized by spectroscopic ellipsometry (SE), laser microscopy, photoluminescence (PL), and atomic force microscopy (AFM). Valuable data such as refractive indexes, deposited layer thicknesses, substrate coverage, emission characteristics, and surface roughness were extracted.