



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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### Model validation by characterization of OLAE & PPV devices (1 of 2)

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## Publishable summary

This document reports the work carried out in Task 3.3 “Electrical characterization for model validation (M1-36)” under the WP3 “Model validation by analytical characterization (M1-M36)”. WP3 conducts experimental tests and characterization to validate the models of WP2. Task 3.3 focuses on the opto-electrical characterisation of the OE materials and devices. To facilitate a roadmap, develop repeatable processes and characterisation methods for this, all partners collaborated during the first months of the project in WP3 Task 3.3 to discuss the device structures, reports problems and mitigation strategies.

This report shows the experimental work undertaken so far in Task 3.3. Single-carrier devices have been fabricated and characterized by the partners involved. Some devices were fabricated using the spin-coating technique in conjunction with vacuum deposition, whereas others were fully solution processed. By using the same materials, this facilitates to analyse the dependence of material parameters on processing techniques. The material parameter that was focussed on in the first period is the charge carrier mobility of holes and electrons in donor and acceptor materials, respectively. A first set of values have been collected. Additionally, complete solar cell devices with organic or perovskite active layers have been fabricated and characterized. Valuable insights into charge extraction processes and device limitations could be obtained and initial device optimisation steps have been carried out.