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Organic Photovoltaics: From Lab to Fab

Guest Editor:

Dr. Gabriel Bernardo
1. LEPABE—Laboratory for Process Engineering, Environment, Biotechnology and Energy, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal
2. ALiCE—Associate Laboratory in Chemical Engineering, Faculty of Engineering, University of Porto, Rua Dr. Roberto Frias, 4200-465 Porto, Portugal

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Message from the Guest Editor

The efficiency of lab-based, small-area organic photovoltaic (OPV) devices has steadily increased over the last 15 years, increasing from <5% in 2005 to >16% in 2019. As encouraging as these results might be, however, such devices fail to meet most of the demands for a commercially viable technology, due to the fact that several requirements for the upscaling of fabrication have not yet been met.

There are several key issues that OPV technology needs to address in order to achieve a reliable lab-to-fab transfer, such as i) fabrication at reduced cost using processing techniques compatible with vacuum-free and roll-to-roll (R2R); ii) use of green environmentally friendly solvents for active layer deposition, replacing the halogenated solvents commonly used at lab scales; iii) development of alternatives to replace indium tin oxide (ITO)—commonly used as transparent conductive electrode—due to its high cost and modest flexibility and conductivity, which limit current extraction in large-area flexible devices; and iv) development of new patterning strategies to connect single cells into large modules, so as to minimize the upscaling performance losses.

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Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo
Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32, 20133 Milano, Italy

Message from the Editor-in-Chief

As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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Applied Sciences Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland

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