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Organic and Perovskite Solar Cells: Working Principles, Materials and Interfaces

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Invited Featured Article *Journal of Colloid and Interface Science*
Organic and Perovskite Solar Cells: Working Principles, Materials and Interfaces

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Dedicated to Prof. J.-F. Nierengarten on the occasion of his 50th birthday

Abstract:

In the last decades organic solar cells (OSCs) have been considered as a promising photovoltaic technology with the potential to provide reasonable power conversion efficiencies combined with low cost and easy processability. Unexpectedly, Perovskite Solar Cells (PSCs) have experienced unprecedented rise in Power Conversion Efficiency (PCE) thus emerging as a highly efficient photovoltaic technology. OSCs and PSCs are two different kind of devices with distinct charge generation mechanism, which however share some similarities in the materials processing, thus standard strategies developed for OSCs are currently being employed in PSCs. In this article, we recapitulate the main processes in these two types of photovoltaic technologies with an emphasis on interfacial processes and interfacial modification, spotlighting the materials and newest approaches in the interfacial engineering. We discuss on the relevance of well-known materials coming from the OSCs field, which are now being tested in the PSCs field, while maintaining a focus on the importance of the material design for highly efficient, stable and accessible solar cells.

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