The roles of bulk and interfacial molecular orientations in determining the performance of organic bilayer solar cells (Presentation Video)

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ABSTRACT

Molecular orientation plays a significant role in determining the performance of small molecule solar cells. Key photovoltaic processes in these cells are strongly dependent on how the molecules are oriented in the active layer. We isolate contributions arising from the bulk molecular orientations vs. those from interfacial orientations in ZnPc/C60 bilayer systems and we probe these contributions by comparing device pairs in which only the bulk or the interface differ. By controlling the orientation in the bulk the current can be strongly modulated, whereas controlling the interfacial molecular orientation and degree of intermixing mediate the voltage.

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