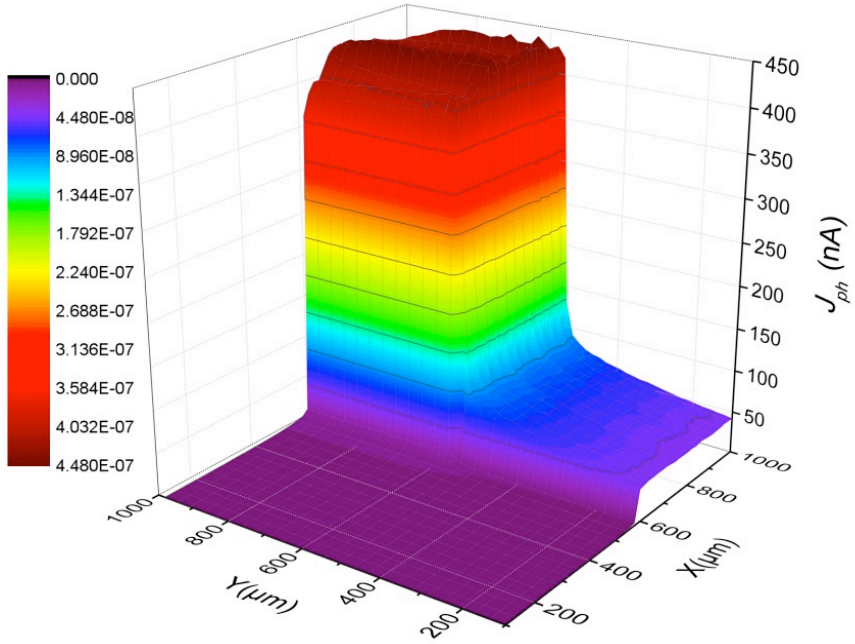
Photocurrent mapping for in-situ measurement of transverse charge transport in organic photovoltaics

(a)



(b)

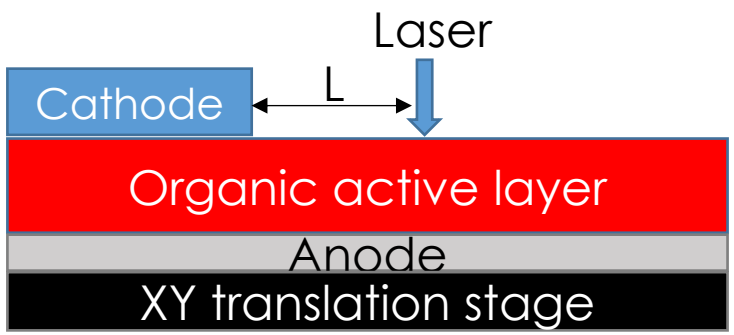


Figure: (a) Photocurrent mapping reveals the transverse charge transport outside the device area. (b) Schematic of photocurrent mapping with local laser excitation.

Objective

- To study the transverse charge transport outside the device area and the role of defects in the charge transport process in organic systems

Impact

The photocurrent mapping system offers a nondestructive way to measure the dependence of electrical performance on local excitation with micrometer-level resolution. This technique can reveal the charge transport properties in organic and 2D material systems over a large distance and characterize the local defects. This method also allows the exploration of novel solar cell structures with reduced device area, dark current and enhanced transparency.

Relevant Papers

- R Graham and D Yu, *Modern Physics Letters B*, DOI: 10.1142/S0217984913300184 (2013)
- QC Burlingame, et al., *Nature*, DOI: 10.1038/nature25148 (2018)

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