Electric Potential Metrology on the Nanoscale

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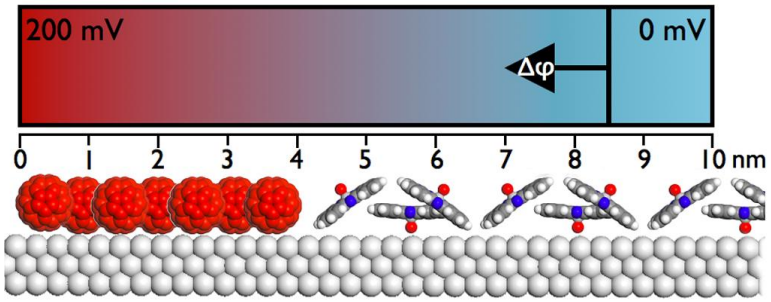

Nanomaterials offer innovative approaches to problems from energy production to information storage. A major challenge for nanomaterial use is limited knowledge of their local electrical properties. The "electric potential sets the charge-transport pathway through a material. Maryland researchers have profiled this potential for nanostructured films found in organic transistors and solar cells. They have made precision measurements of "potential s*teps*" at material interfaces contained in the organic films, showing how these step "heights" depend upon the molecular building blocks, while step "widths" exceed the molecular size. Electric potential channels as narrow as three nm are thus possible in organic films.

Measurements that relate nanoscale structure to the local potential ("electric potential metrology") enable nanomaterial design for more efficient use in energy and electronic technologies. (See : *Nano Lett.*, **DOI:** 10.1021/nl3004607 (2012)