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Persistent Photoconductivity and Photo-induced Morphology Changes of Porphyrin Nanorods B.E. FELDMAN, E.A. MULLER, V.H. JOINES, W.F. SMITH, Haverford College, A.D. SCHWAB, Appalachian State U., J.C. DE PAULA, Lewis and Clark College, D.E. JOHNSTON, A.T. JOHNSON, U. of Pennsylvania — Tetrakis(4-sulfonatophenyl) porphine self assembles into well-defined nanorods with intriguing photoelectronic properties.[1] Recently, we have found that, over long time scales, they undergo a transition from non-persistent photoconductivity (NPPC) to a new mode, in which part of the conductivity persists after the light is blocked, decaying over hundreds of seconds. NPPC initially dominates, but its growth asymptotes within 2-3 hours of illumination, while the persistent current continues to grow, even after 8 hours of light exposure. The decay of persistent current after the light is blocked can be roughly modeled by a single exponential; a double exponential fits much better. The morphology of some nanorods changes as a result of long-term illumination—they become shorter, thinner and less well-formed. Other rods, however, appear unchanged. This and other structural changes may be related to the slow growth of persistent current. [1]A.D. Schwab *et al.*, Nano Letters **4**, 1261 (2004).

Walter Smith
Haverford College

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