Abstract Submitted
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Metal-Insulator Transition in Polyaniline MATTHEW DIEFENBACH, None — Polyaniline emeraldine an organic semiconducting polymer is proven to be an effective material in electrical components and in various solar-cells. The Renewable Energy Laboratory at California State University East Bay is researching polyaniline emeraldine with the purpose of identifying the metal-insulator transition (MIT). Measuring the MIT will provide new information in understanding how these materials conduct electricity and may offer insight in improving its applications in renewable energy. In addition, our lab uses a doping technique with hydrochloric acid that effectively varies polyaniline's conductivity within the MIT regime. Experimentally, we have confirmed that the insulator-to-metal framework found in these conducting polymers exhibits similarities to traditional, inorganic doped semiconductors like crystalline doped silicon. [1] E. Tapavicza, A. M. Meyer, and F. Furche. Unravelling the details of vitamin D photosynthesis by non-adiabatic molecular dynamics simulations. Phys. Chem. Chem. Phys., 13:20986, 2011. [2] E. Tapavicza, G. D. Bellchambers, J. C. Vincent, and F. Furche. Ab initio non-adiabatic molecular dynamics. Phys. Chem. Chem. Phys., 15:1833618348, 2013. [3] B. C. Arruda, J. Peng, B. Smith, K. G. Spears, and R. J. Sension. Photochemical ring-opening and ground state relaxation in alpha-terpinene with comparison to provitamin D3. J. Phys. Chem. B, 117(16):46964704, 2013. [4] Schalk, O.; Boguslavskiy, A. E.; Stolow, A. Two-Photon Excited State Dynamics of Dark Valence, Rydberg, and Superexcited States in 1,3-Butadiene. J. Phys. Chem. Lett., 5, 560-565, 2014.

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None

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