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Atomic-Scale Spectroscopy of Polydiacetylene Nanowires RAJIV GIRIDHARAGOPAL, Rice University, K. F. KELLY, Rice University — In recent years, the appeal of organic electronic devices has spurred interest in conducting polymers, such as polydiacetylene. Polydiacetylene nanowires offer numerous possibilities for application in molecular electronics, and they are a model system for understanding conduction mechanisms in polymers. We have used scanning tunneling microscopy to investigate monolayer films of pentacosadiynoic acid formed on highly ordered pyrolytic graphite using the Langmuir-Blodgett and Langmuir-Schaeffer deposition techniques and subsequently polymerized to form polydiacetylene nanowires. By applying a novel method of microwave frequency mixing at the STM tip junction, we have obtained capacitance-voltage spectroscopic data to characterize the wires across a range of bias voltages, tunneling gap resistances, and microwave mixing frequencies.

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