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Single-Molecule Electroluminescence with STM. GUEORGUI NAZIN, Department of Chemistry, University of California, Irvine, CA 92697-4575, USA., SHIWEI WU, Department of Physics, University of California, Irvine, CA 92697-4575, USA., XIAOHUI QIU, IBM Research Division, T. J. Watson Research Center, Yorktown Heights, New York 10598, USA, WILSON HO, Department of Physics and Astronomy and Department of Chemistry,University of California, Irvine, CA 92697-4575, USA. — The electron current of a scanning tunneling microscope (STM) is used to excite electroluminescence of individual Zn-Etioporphyrin-I and Mg-porphine molecules adsorbed on an ultrathin Al_2O_3film grown on the NiAl(110) surface. Al_2O_3film acts as a spacer reducing the quenching of luminescence by the metal substrate. The electroluminescence spectra show well-defined features attributable to vibrational excitation of the molecules. Electroluminescence is sensitive to the molecular adsorption configuration as well as to the position of the STM tip above the molecule. A clear correlation with the corresponding differential conductance spectra is observed.

Gueorgui Nazin
Department of Chemistry, University of California, Irvine, CA 92697-4575, USA.

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