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Nanoscale interplay of inhomogeneity and electron interactions in the quasi one-dimensional purple bronze $Li_{0.9}Mo_6O_{17}$[1] JUNG HOON LIU, ANJAN SOUMYANARAYANAN, MICHAEL YEE, YANG HE, Harvard University, MARTHA GREENBLATT, Rutgers University, NIGEL HUSSEY, University of Bristol, JENNIFER HOFFMAN, Harvard University — The marked deviation from Fermi liquid behavior for the quasi one-dimensional (1D) purple bronze, $Li_{0.9}Mo_6O_{17}$ (LPB), has been observed by both bulk transport and surface sensitive spectroscopic probes, and has generated much theoretical interest. Here we report on spectroscopic scanning tunneling microscopy (STM) studies of 1D 'chains' on the surface of LPB in the presence of a magnetic field. While we can consistently identify high-energy features in the tunneling density of states corresponding to the bulk band structure, we find that the Coulomb suppression of tunneling around the Fermi energy is inhomogeneous on the nanometer length scale. We discuss the inhomogeneity in the context of the 1D 'chains', and its implications on other measurements.

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