

Abstract Submitted
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Modified electron-boson coupling in $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ nanocrystals LUKE SANDILANDS, University of Toronto, Canada, ZHIJUN XU, ALINA YANG, GENDA GU, Brookhaven National Lab, USA, TOR PEDERSEN, FERENC BORONDICS, Canadian Light Source, Canada, KENNETH BURCH, University of Toronto, Canada — The coupling between electrons and bosons is thought to underlie a variety of unusual behavior in the cuprates. Here we present optical evidence that the electron-boson coupling is strongly modified in mechanically-exfoliated $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ nanocrystals. Through an extended Drude analysis of the mid-infrared optical conductivity, we demonstrate that the electron-boson spectral function is blue-shifted and enhanced in thin $\text{Bi}_2\text{Sr}_2\text{CaCu}_2\text{O}_{8+\delta}$ nanocrystals. Taken together with complementary Raman and Laue diffraction data, our results provide further evidence that the bosons relevant to the electrodynamics of the normal state are magnetic.

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