

Abstract Submitted
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Infrared spectroscopy of a novel iron-based superconductor
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University of Wisconsin Oshkosh, ADAM KONCZ, The University of Akron, RONG-
WEI HU, C. PETROVIC, Brookhaven National Lab — We will present the results of
our infrared and optical studies of a novel iron-based superconductor Fe_{1.06}Te_{0.88}S_{0.14}
with $T_c = 8$ K. Measurements have been performed over a broad range of frequen-
cies (50 - 50,000 cm⁻¹) and temperatures (10 - 300 K). Our results reveal that the
superconducting state develops from an unconventional normal state, without well
defined quasiparticles. The structural and magnetic phase transitions at $T \simeq 23$ K do
not seem to have significant effect on optical properties of Fe_{1.06}Te_{0.88}S_{0.14}. We in-
troduce “generalized spectral weight” analysis, and use it to track the redistribution
of spectral weight with temperature.

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