

Abstract Submitted  
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**Far-infrared optical properties of pyrochlore heavy fermion superconductor  $\text{Cd}_2\text{Re}_2\text{O}_7$  in the normal and superconducting states**<sup>1</sup> M. REEDYK, M. HAJIALAMDARI<sup>2</sup>, D.A. CRANDLES, F.S. RAZAVI, Dept. Physics, Brock University, R.K. KREMER, Max Planck Institute for Solid State Research —  $\text{Cd}_2\text{Re}_2\text{O}_7$  is a pyrochlore oxide which exhibits superconductivity with a transition temperature  $T_C$  near 1 K. The far-infrared optical properties of  $\text{Cd}_2\text{Re}_2\text{O}_7$  will be presented at temperatures above and below  $T_C$ . Superconductivity induced changes in the phonon structure are observed. Thermal reflectance spectra show two absorption features, near 9.6 and 19.3  $\text{cm}^{-1}$  which arise in the superconducting state. Optical conductivity spectra reveal a softening ( $\sim 1 \text{ cm}^{-1}$ ) of the phonon mode at 35  $\text{cm}^{-1}$  in the superconducting state. Analysis of the frequency dependent optical effective mass and scattering rate support the classification of this material as a modest heavy electron system at low temperatures.

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