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13. ABSTRACT (Maximum 200 words)

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The electrical, magnetic and optical properties of the fullerene superconductors K_3C_{60} and Rb_3C_{60} have been investigated. The room temperature microwave resistivity at 60 GHz of pressed powder samples of K_3C_{60} is approximately $5m\Omega cm$. The resistivity drops by almost one order of magnitude on cooling to 20K, indicative of metallic behavior, before the samples superconduct at $T_c = 19.3K$. Optical reflectivity spectra are consistent with metallic materials. An extrapolation of the frequency dependence of conductivity leads to d.c. conductivities of $1.3 \times 10^3 (\Omega cm)^{-1}$ and $1.2 \times 10^3 (\Omega cm)^{-1}$ for K_3C_{60} and Rb_3C_{60} , respectively. The gap values Δ of $24 cm^{-1}$ for K_3C_{60} and $30 cm^{-1}$ for Rb_3C_{60} are consistent with weak-coupling and a BCS singlet ground state. Upper critical fields of 28-30 Tesla for K_3C_{60} and 38-55 Tesla for Rb_3C_{60} have been measured. The lower values are from static magnetic experiments, while the upper values used pulsed magnets.

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O. Klein, G. Grüner, S.M. Huang, J.B. Wiley and R.B. Kaner, "The electrical resistivity of K_3C_{60} ," *Phys. Rev. B.*, **46**, 11, 247 (1992). (3 pages)

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