

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Anomalous electric conductivity in C60-Ag co-deposited films at low temperature GENKI YOSHIKAWA, IMR, Tohoku University; The University of Tokyo, YUKI TSURUMA, SUSUMU IKEDA, KOICHIRO SAIKI, The University of Tokyo — The C60-Ag interface has attracted interest recently. In addition to charge transfer from Ag to C60 or metallization of C60, temperature dependent gap was observed at the Fermi level of the C60 monolayer on Ag, suggesting the possibility of interfacial superconductivity. In order to clarify the effect of this interfacial electronic state on the transport properties, we measured the electric conductivity of the C60-Ag complex films. To increase the interface area, Ag and C60 were co-deposited on the insulating substrate, such as mica, maintained at 23 K, suppressing the aggregation of Ag atoms. The electric conductivity of the C60-Ag co-deposited films was measured in-situ in a temperature range of 23-300 K. Two peaks were observed in the conductivity curve around 50 K and 85 K. They disappeared once the film was annealed up to room temperature. This phenomenon was observed when the Ag/C60 ratio is approximately 1 to 6 while we studied in the range of 0.5-20. We confirmed that these peaks were not caused by the influence of Joule heating or residual gases. The observed anomalous electric conductivity strongly suggests the formation of peculiar structure and electronic states in the films at low temperature.

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Date submitted: 27 Nov 2005

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