

Abstract Submitted
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Giant Paramagnetism of Copper Nanoparticles in Nanocomposites Cu@C EDUARD SHAROYAN, ARMEN MIRZAKHANYAN, HARUTYUN GYULASARYAN, ARAM MANUKYAN, Institute for Physical Research, National Academy of Sciences, Ashtarak 0203, Armenia, MEDHANIE ESTIPHANOS, MICHAEL GOFF, OSCAR BERNAL, ARMEN KOCHARIAN, Physics Department, California State University, Los Angeles, CA 90032 — The copper nanoparticles in nanocomposites Cu@C, encapsulated in graphitized carbon shell was obtained by the solid-phase pyrolysis method of polycrystalline phthalocyanine (CuPc, $\text{Pc}=\text{C}_{32}\text{N}_8\text{H}_{16}$). The average sizes of the nanoparticles are in the range of 2-6 nm. Magnetic measurements were carried out by vibrational magnetometer in the temperature range 10-300 K. At low temperatures ($<70\text{K}$) we observed a giant paramagnetism, apparently due to the (ballistic) conduction electron (large orbital magnetism). The values of the specific susceptibility at $T = 10\text{K}$ with magnetic specific susceptibility of $5 \bullet 10^{-5}$ emu/g•Oe order. This work was supported by the RA MES State Committee of Science, in the frames of the research project SCS-13-1C090. The work at California State University was supported by the National Science Foundation-Partnerships for Research and Education in Materials under Grant DMR-1523588.

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