

Abstract Submitted
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Magneto Transport of CVD Carbon in Artificial Opals¹ LEI WANG, Physics and Astronomy, USC, Columbia, SC 29208, MING YIN, FAUZI ARAMMASH, Physics/Engineering, Benedict College, Columbia, SC 29204, TIMIR DATTA, Physics and Astronomy, USC, Columbia, SC 29208 — Magneto-transport of carbon inverse opal structures were investigated in the 2.5 to 300 K temperatures and magnetic fields in the 0-10T regime. Qualitatively, our observations lie between those reported by previous researchers. Over this temperature range, transport (in zero magnetic field) is non-metallic; the resistance decreased with rising temperature however the temperature dependent behavior is not activated, as observed with variable range hopping. In three-dimensions, such behavior can also be the result of weak localization and electron-electron interactions; in particular the change in conductivity is a polynomial in fractional powers of absolute temperature. At sub-helium temperature regimes the relative magneto resistance is measured to be ~ 0.1 percent per Tesla. Results of data analysis for several different scenarios will be reported.

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