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Physical properties of self-assembled monolayers of carbon nanotubes V.A. SAMUILOV, Dept. of Materials Sci., SUNYSB and Dept. of Physics, State Univ. of Belarus, J. GALIBERT, Laboratoire National des Champs Magnetiques Pulses, France, V. KSENEVICH, N.A. POKLONSKI, Dept. of Physics, State Univ. of Belarus, L. FORRO, Ecole Polytechnique Federale de Lausanne, Switzerland, J. KOO, K. YOON, M. RAFAILOVICH, J. SOKOLOV, Dept. of Materials Science, SUNYSB — The controlled method of self-assembly of functionalized carbon nanotubes into 2-D layers with highly regular structure and unique electronic properties has been developed. We use the Langmuir-Blodgett (LB) technique and newly developed inverted LB techniques. The alignment carbon nanotubes in the self-assembled 2-D layers was also introduced. The methods we propose, could be used for covering large surfaces with dense, molecularly ordered ultra-thin films of nanotubes of controlled thickness and orientation. The electrical, thermal conductivity and magneto-transport properties of the monolayers (arrays) of multi-wall and single-wall carbon nanotubes in the temperature range 1.8-300K and in magnetic fields up to 35 T have been tested.

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