Effects of surfactant to the physical properties of single-walled carbon nanotube buckypaper.\textsuperscript{1} JIN GYU PARK, CHARLIE LIN, JESSE SMITHYMAN, ADAM COOKE, SHU LI, RICHARD LIANG, CHUCK ZHANG, BEN WANG, High-Performance Materials Institute, Florida State University, ADE KISMARAHARDJA, JAMES BROOKS, Department of Physics, Florida State University, HIGH-PERFORMANCE MATERIALS INSTITUTE, FLORIDA STATE UNIVERSITY COLLABORATION, DEPARTMENT OF PHYSICS, FLORIDA STATE UNIVERSITY COLLABORATION — Single-walled carbon nanotubes (SWCNTs) were dispersed in aqueous medium using surfactant and filtered to get an entangled network, called buckypaper (BP). Thermogravimetric analysis shows that the remaining surfactant has significant weight percentage and has effects on the physical properties. Raman spectrum of BP, especially the radial breathing mode is related to the entanglement degree and residual surfactant. The G-band peak shift shows different temperature dependence with the reduction of residual surfactant in the BP and oxidation of nanotube. The electrical conductivity was improved after removing surfactant and temperature dependence of electrical resistivity followed variable range hopping type conduction. Mechanical properties are also affected from their integration degree, alignment, and residual surfactant. Therefore, tensile modulus and strength were improved after washing surfactant.

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