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Formation of New Carbon Structure under Quasi-Hydrostatic High Pressure MINSEOB KIM, JING-YIN CHEN, Institute for Shock Physics, Washington State University, CHOONG-SHIK YOO, Institute for Shock Physics and Department of Chemistry, Washington State University — The crystal structure of single wall carbon nanotubes (SWNT) has been studied using synchrotron x-ray diffraction to 15 GPa as well as, of the recovered samples, using transmission electron microscope (TEM) at the ambient pressure. While the majority of SWNT remains unchanged upon the pressure cycling, the recovered samples also exhibit new carbon species about $\sim 2-3\%$ in forms of amorphous carbon bundles with various sizes of carbon onions. The structure of the recovered species varies depending on the pressure-transmitting medium, from highly crystalline in N_2 and He to highly disordered in Ne. In this paper, we will discuss the crystal structure of several pressure-treated SWNT samples as observed in x-ray diffraction and in relations with the TEM images.

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