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**Physical and Chemical Transformations of Sodium Cyanide at High pressures** JING-YIN CHEN, Institute for Shock Physics, Washington State University, Pullman, Washington 99164 - 2816, CHOONG-SHIK YOO, Institute for Shock Physics and Department of Chemistry, Washington State University, Pullman, Washington 99164 - 2816 — Pressure-induced physical and chemical transformations of Sodium Cyanide (NaCN) have been studied up to 50 GPa in diamond-anvil cells, using micro-Raman spectroscopy and angle-resolved synchrotron x-ray diffraction. The present results suggest three phase transitions to occur in this pressure range: from NaCN-I (cubic) to NaCN-II (orthorhombic) at 2 GPa, to NaCN-III (monoclinic) at 8 GPa, and to NaCN-IV (tetragonal) at 15 GPa. At higher pressures, NaCN-IV undergoes irreversible chemical changes, which occurs over a large pressure range between 25 and 34 GPa. The new material exhibits a broad yet strong Raman band at around  $1600\text{ cm}^{-1}$ , indicating the formation of C=N bonds in a similar configuration of carbon graphite.

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