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Angle-Dispersive High-Pressure Synchrotron Radiation X-Ray Diffraction Studies of Pentaerythritol Tetranitrate on Compression Sequence up to 30 GPa[1] KRISTINA LIPINSKA-KALITA, High Pressure Science and Engineering Center, University of Nevada Las Vegas, MICHAEL PRAVICA, MALCOLM NICOL, University of Nevada Las Vegas and High Pressure Science and Engineering Center — High-pressure synchrotron x-ray diffraction studies of pentaerythritol tetranitrate, $C(CH_2ONO_2)_4$, have been performed *in-situ* (diamond anvil cell). The spectral changes at low pressures (up to 7 GPa) indicated continuous densification of the tetragonal structure (space group $P\bar{4}2_1c$) and the compound compressed with a 17% decrease in the unit cell volume. At 8 GPa and above several new diffraction lines appeared in the patterns. These lines have been attributed to a pressure-induced structural transformation from the tetragonal to an orthorhombic structure (space group $P2_122_1$). The progressive broadening of the diffraction lines that appeared with pressure increase beyond 10 GPa was attributed to a blend of two coexisting PETN phases with combined diffraction lines. More detailed high-pressure investigations will follow, in particular regarding the choice of the space group of the proposed new orthorhombic structure.

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