

Abstract Submitted  
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**Pressure-induced amorphization and polyamorphism in TiO<sub>2</sub>-B nanoribbons** QUANJUN LI — The phase transitions of TiO<sub>2</sub>-B nanoribbons were investigated with synchrotron X-ray diffraction and the Raman spectroscopy. Our results have shown PIA occurred in TiO<sub>2</sub>-B nanoribbons upon compression, resulting in a high density amorphous (HDA) form related to the baddeleyite structure. Upon decompression, the HDA form transforms to a low density amorphous (LDA) form while the samples still maintain their pristine nanoribbon shape. HRTEM image reveals that the LDA phase has an  $\alpha$ -PbO<sub>2</sub> structure with short range order. We propose a homogeneous nucleation mechanism to explain the PIA for the TiO<sub>2</sub>-B nanoribbons. Our study demonstrates that PIA and polyamorphism occurred in the one-dimensional (1D) TiO<sub>2</sub> nanomaterials for the first time and provides a new method for preparing 1D amorphous nanomaterials from crystalline nanomaterials.

Quanjun Li

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