

## Poster Presentation

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### *Effect of Pressure Changes during Optical Floating Zone Crystal Growth*

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In the process of the growth of the magnetically frustrated pyrochlore holmium titanate, Ho<sub>2</sub>Ti<sub>2</sub>O<sub>7</sub>, fluctuations in the pressure of the optical floating zone image furnace were observed. Upon removal, banding from colour centres was noted. These bands were removed by annealing the material at 600 degrees Celsius for 12 hours. Based on this observation, a series of growths was performed to determine the effects of small pressure fluctuations on the lattice spacing of a material grown by the optical floating zone method. Multiple crystals of holmium titanate were prepared from the same precursor materials, pre-reacted in an identical way and grown under variable overpressures between 2 and 8 atmospheres in both argon and oxygen. Initial measurements using single crystal x-ray diffraction showed that there were differences in the crystallographic lattice spacings that were significantly outside of instrumental error. These differences generally corresponded to a correlation of decreased spacing with increase pressure. This talk will present our recent results of a significantly larger sample set of this material, analyzed using powder x-ray diffraction methods on ground up portions of the grown single crystal.

**Keywords:** Crystal Growth, Optical Floating Zone, X-ray Diffraction