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Pressure induced superconductivity in LaFeAsO: the role of anionic height and magnetic ordering[1] RAVHI KUMAR, HiPSEC and Dep. Physics, University of Nevada Las Vegas, JAMES HAMLIN, Department of Physics, University of California San Diego, YUMING XIAO, STANISLAV SINOGEIKIN, PAUL CHOW, HPCAT and Carnegie Institution of Washington, BRIAN MAPLE, Department of Physics, University of California San Diego, YUSHENG ZHAO, HiPSEC and Dep. Physics, University of Nevada Las Vegas, ANDREW CORNELIUS, HiPSEC and Dep.Physics, University of Nevada Las Vegas — We have investigated the pressure effect on the crystal structure and magnetic ordering of LaFeAsO at low emperature ($\sim$18K) using high pressure powder x-ray diffraction (HPXRD) and nuclear forward scattering (NFS) to pressures up to 40 GPa. We demonstrate a continuous suppression of the long range antiferromagnetic ordering in this compound under pressure. Furthermore we show here a direct correlation between the pressure induced changes in the anionic height parameter to the transition temperature (Tc) and is first observed in the 1111 class of iron arsenide compounds under pressure. Our findings suggest that pressure induced suppression of magnetic ordering and the anionic height variation both play important roles in the origin of pressure induced superconductivity in LaFeAsO.

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