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High-pressure x-ray diffraction study of $Pb(Mg_{1/3}Nb_{2/3})O_3$-32%$PbTiO_3$.[1] MUHTAR AHART, RONALD E. COHEN, RUSSELL J. HEMLEY, Carnegie Institution of Washington — Motivated to determine and understand PMN-32%PT's behavior under pressure, we employed the angular dispersive x-ray diffraction methods (Advanced Photon Source, Argonne National Laboratory) to investigate PMN-32%PT in a diamond anvil cell up to 15 GPa. The x-ray diffraction results show changes in Bragg peaks at 4 GPa which indicate that PMN-32%PT undergoes a ferroelectric rhombohedral to a paraelectric cubic phase transition. In addition, we investigated the pressure dependence of domain structure of PMN-32%PT up to 10 GPa; rhombohedral domains decrease with pressure and disappear above 4 GPa. These results are qualitatively consistent with earlier Raman study of B. Chaabane, {Phys. Rev. B 70, 134114, 2004}. We suggest a phase diagram for PMN-PT system which is slightly different from the one predicted by B. Chaabane et al.

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