**Vibrational Dynamics and Phase Diagram of $KNbO_3$ up to 30 GPa and from 10 to 500 K**

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The phase diagram of $KNbO_3$ was investigated with Raman scattering up to 30 GPa and in the 10 to 500 K temperature range. Macroscopic ferroelectricity vanishes on compression and the various ferroelectric solids, rhombohedral, orthorhombic and tetragonal (R-O-T), were found to exist in close domains of the pressure-temperature plane. Specifically the T solid vanishes below 200 K and the R and O solids exits very likely down to 0 K. The transition to the cubic paraelectric phase is of the displacive type at low temperature whereas it is of the order-disorder type at high temperature. In the cubic solid, first-order Raman scattering, assigned to structural distortion due to dynamical disorder, was observed. The distortion is orthorhombic below 200 K and tetragonal above, which may stems from the rapid decrease with temperature of the Nb ion dwelling time in its site. The phase diagram from Raman will be compared with results obtained from conventional x-ray diffraction.

[1] Pruzan Ph., Gourdain D., Chervin J.C., *High Pressure Research,* 2002, **22**, 243, *and references therein*. [2] Pruzan Ph., Gourdain D., *High Pressure Research,* 2004, **24**, 129, *and references therein*.

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