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Abstract for an Invited Paper  
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**LiH equation of state by static and shock compression**

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We will present experimental progress towards a more complete picture of the equation of state of LiH at extreme conditions, for the purpose of constraining theoretical models. A high-precision 300K isotherm up to 2.5 Mbars was measured using X-ray diffraction on polycrystalline samples compressed in diamond anvil cells, revealing that LiH does not transform from the B1 phase to the predicted B2 phase in this pressure range. Raman spectroscopy probed the vibrational properties along the isotherm. We will also present new results from shock compression studies of the principle Hugoniot between 3 and 8 Mbars. Portions of this work were performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.