

Abstract Submitted
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A new quartz capacitance dilatometer for magnetostriction measurements MARIO S. DA LUZ, DAVID P. CEBULLA, JOHN J. NEUMEIER, Montana State University — A new dilatometer cell has been developed for measuring magnetostriction. It is constructed entirely of fused quartz and consists of two rectangular metallized plates. This is a capacitive technique because the space between these plates changes when the sample length changes in magnetic field. In this work the construction and performance of the cell are discussed. In addition, we show preliminary results for magnetostriction of the low dimensional conductor $\text{Li}_{0.9}\text{Mo}_6\text{O}_{17}$. This system is investigated because prior measurements have shown the electrical resistivity to be strongly dependent on magnetic field. Our goal is to determine if the sample dilation caused by the magnetic field plays a role in the magnetoresistance. Measurements of the magnetoresistance and magnetostriction will be done in magnetic fields up to 9 T. This material is based upon work supported by the National Science Foundation (DMR – 050476 and DMR – 0552458) and Department of Energy Office Basic of Energy Sciences (DE – FG – 06ER46269).

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