**Some interesting phenomena of condensed matters**

**including *f* and *d* electrons at high pressure**

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We report some interesting phenomena of condensed matters including *f* and *d* electrons at high pressure. We describe also briefly an apparatus using at multi-extreme condition such as high pressure, low temperature and high magnetic fields. Following results are reported.

1. Pressure-induced enhancement of giant magnetoresistance(GMR) of nanoscale material Fe/Cr magnetic multilayers(MML): We report the first observation of large pressure-induced enhancement of GMR of Fe/Cr MML.In Fe/Cr MMLs the GMR of Cr layer thickness with about 30Å,the GMR was enhanced to be twice as large as that at ambient pressure. The origins for that will be discussed.
2. Anomalous compression curve of rare earth hexaborides, RB6 (R:rare earth elements)

The lattice constants are observed at high pressure at room temperature up to about 15 GPa by using X ray diffraction. In the present work the results for R=Dy,Tb and La are reported. On the basis of these compression curves the bulk modulus *B* is obtained. It is found that the magnitude of *B* of R=La is larger than those of R=Dy and Tb. The results are discussed comparing with the general trends of bulk modulus of rare earth elements.

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