

Synthesis of new hydrides at high pressures

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We will describe recent results for synthesis of (poly)hydrides of selected transition metals. The synthesis methods which we use take advantage of the recently developed capabilities for laser heating in cryogenically cooled samples and also benefit from the pulsed laser heating techniques. The experimental results will be compared to theoretical

predictions, showing good agreement between theory and experiment. Several techniques for detecting superconducting response of new polyhydrides will be also presented, along with recent experimental results for high- T_c superconductivity in hydrogen-rich materials.