



# 凝聚态物理前沿论坛

## 第四十八讲

**题目：** New Structures and Novel Superconductivity of Hydrogen-rich Materials under High Pressure

**报告人：** 崔田 教授 吉林大学

**时间：** 2017年6月5日 (周一) 上午 9: 00

**地点：** 固体所新楼520会议室

### 报告人简介：

崔田，吉林大学物理学院、超硬材料国家重点实验室教授，长江学者，国务院政府特殊津贴获得者，新世纪百千万人才工程国家级人选，国家“万人计划”领军人才。长期从事高压极端条件下凝聚态物质的结构与性质研究，注重理论与实验研究相结合，在纯氢和富氢体系以及其它简单分子凝聚体系的高压结构与奇异特性、超硬多功能材料的理论设计与实验合成等方面，取得了多项成果。获得国家自然科学二等奖2项、省部级一等奖4项。

### 报告摘要：

The lofty goal in the studies of superconductors is to achieve superconductivity at room temperature. Metallic hydrogen is believed to be such a material with room-temperature superconductivity. However, metallization of hydrogen is still debates in laboratory. As an alternative, hydrogen-rich compounds are extensively explored which are expected to become a new member of superconductor family: hydrogen- based superconductor.

We have explored extensively the crystal structure and superconductivity of new sulfur hydride  $H_3S$  and other hydrogen- rich materials under high pressure by means of the first principle calculation and in situ high pressure experimental measurements. It was predicted at first time that  $H_3S$  with  $Im-3m$  symmetry theoretically by our group to be a high-temperature superconductor with  $T_c$  reaching as high as 200 K at high pressure, which has been confirmed experimentally. Furthermore, other hydrogen-rich materials, such as disilane, were also found to be high-temperature superconductors at high pressures.

