学术报告

题　目　笼状水合物材料的高压中子衍射研究

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地　点　固体所 3 号楼 321 会议室

摘要：Neutron diffraction allows for determination of guest occupancies of the cages together with the host structure in clathrate hydrates. It is much more sensitive to the positions of hydrogen or its isotopes and other light elements, making neutron scattering well suited for studying light-element-containing materials such as CH_4, H_2, N_2, CO, CO_2 and Ne clathrates. In addition, as neutrons are more penetrating than x-rays, one can probe samples inside high-pressure vessels. Hence, neutron scattering in combination with variable temperature and pressure capabilities is a powerful tool to monitor the gas uptake/release processes in inclusion compounds such as clathrates, especially for locating the incorporated gas molecules and characterizing their interactions with the host frameworks. In this talk, the kinetic process of CO clathrate growth, the CO_2 substitution of CH_4 in clathrate and ice-II neon clathrates studied by neutron diffraction, maximum entropy method (MEM), and molecular dynamic calculation will be addressed.

朱金龙， 2009 年中科院物理研究所获理学博士学位，当年留所任助理研究员，2012 年晋升中科院物理研究所副研究员，期间在 Los Alamos National Laboratory 和 University of Nevada, Las Vegas 做访问学者。研究方向包括：（1）高压能源水合物合成及中子原位动力学和热力学研究，二氧化碳气体水文地质封存及原位中子三维成像研究；（2）高压凝聚态物理材料的原位同步辐射表征，包括 6-8 大压机和金刚石对顶压砧技术；（3）高压方法合成和研究新型亚稳材料，包括超导材料，铁电、多铁材料，锂电池材料；（4）利用原位高压中子和同步辐射研究锂电池离子传输以及无序材料的原子核/电子密度分布。朱金龙博士与合作者发表 SCI 论文 50 余篇，H-index 11。

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