



## 学术报告

### Hydrogen Generation by Means of Fluidized Bed Membrane Reactors

Prof. John Grace

Department of Chem. Biological Engineering, University of British Columbia (UBC), Canada

报告地点：生物楼学术报告厅

报告时间：2007年1月8日 上午 9:10-10:30

#### 报告人简介：

John R. Grace教授于1965年毕业于加拿大University of Western Ontario，获学士学位，1968年在英国剑桥大学化学工程系获得博士学位。Grace教授是国际著名的化工及流态化专家，于1979-87年间任UBC化学与生物工程系主任，在气-固、液-固、气-液-固三相流态化基础及应用研究方面有很深的造诣，研究工作化工及能源领域涉及流动、传热、传质、燃烧、气化、重整及反应器放大等共性问题。撰写/编著过6本著作，发表过360多篇学术论文，申请/授权6项专利，指导毕业硕士、博士研究生70多位。Grace教授曾先后获得包括国际流态化奖(International Fluidization Award)在内的十几项奖励。

#### 报告摘要：

Most hydrogen is made in industry by steam methane reforming in fixed bed reactors. In a process developed in our laboratory, we have radically reconfigured the process so that we use fluidized beds and insert perm-selective membranes in the bed to extract hydrogen as it is produced. This leads to a number of advantages – higher conversions, reduced penalty for operating at high pressure, improved catalyst effectiveness factors, enhanced heat and mass transfer, etc. The new process has promise for capacities of relatively small scale, e.g. for generation of hydrogen at fuelling stations for vehicles equipped with fuel cells. Technical challenges associated with the new process will be discussed at the seminar relating to the design and operation of the fluidized bed membrane reactors. We are also engaged in efforts to remove carbon dioxide via cyclical calcination/ carbonation capture. This can be combined with reforming to further improve yields, but again there are serious technical challenges.

报告联系人：陈研

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大连市中山路 457 号 邮编:116023 457 Zhongshan Road,Dalian,China PC:116023  
电话 (TEL):+86-411-84379163 传真 (FAX):+86-411-84691570