



# 学术报告

**报告题目: High Temperature Solid Oxide Electrolysers for Green Fuel Production**

**报告人: 陈铭**

**报告时间: 2023年12月29日下午 3: 00**

**报告地点: 计算机楼A229**

**主办单位: 低碳能源与动力工程学院**

**报告人简介:**



陈铭博士是丹麦技术大学能源转化与储存系的教授。在固体氧化物电池 (SOEs) 领域拥有超过25年的研究经验, 研究领域涵盖单电池和电堆开发与测试、微观结构表征、微观结构演化建模等方面。带领其项目团队在用于高温电解质的固体氧化物单电池及电堆部件的制备, 电化学性能和微观结构表征, 性能和长期稳定性的优化等方面做出了突出贡献。在Energy & Environmental Science, npj

Computational Materials, Chemical Engineering Journal, Acta Materialia等国际期刊或会议

论文集上发表了论文160余篇文。曾担任13个丹麦和欧盟项目负责人。是丹麦自然科学学院院士以及丹麦电化学学会副会长。于2005年获得美国陶瓷协会颁发的Richard and Patricia Spriggs相平衡奖。基于其在高温电解和项目管理方面的杰出贡献, 被丹麦国家电网公司 (Energinet.dk) 授予2016研究大奖 (ForskEL-prize 2016)。

**报告简介:**

Globally the amount of electricity generated from renewable energy sources is increasing. To integrate high amount of fluctuating energy into the existing energy grid, efficient and cost competitive conversion of electricity into other kinds of energy carriers is needed. Solid oxide electrolysis (SOE) has the potential to become a key technology in enabling this integration. With solid oxide electrolysis cells (SOECs), electrical energy can be converted to chemical energy and stored as H<sub>2</sub> or synthesis gas (syngas, CO+H<sub>2</sub>) via high temperature electrolysis of steam or co-electrolysis of steam and CO<sub>2</sub>. H<sub>2</sub> and syngas can be further processed to a variety of synthetic fuels, which may be stored and later either reconverted into electricity or used in the transportation sector. Within the last decade, we have coordinated and participated in a number of projects on developing the SOEC technology. In this presentation results from the recently completed projects will be given. The focus will be on performance and durability of different generations of SOEC cells and stacks, together with post-mortem analysis results. Latest results on using SOEC stacks for grid balancing based on real-world wind profile will be highlighted. Potential problems in terms of life time limiting degradation phenomena in SOEC operation (both at the cell level and at the stack level) will be discussed in detail based on own findings as well as literature. Finally, some of the challenges faced in the future development of SOEC cells, stack components and stacks will be presented.

**欢迎广大师生积极参加!**