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PREC
Professorship of Renewable Energy Carriers

Energy Science Center

Institute of Energy Technology – Professorship of Renewable Energy Carriers

Invitation to a Seminar

Date: Wednesday, July 15, 2015
Time: 16:00- 17:30
Place: Maschinenlaboratorium ETH Zürich, ML-J25/26

Speaker: Prof. Graham 'Gus' Nathan
Professor in Mechanical Engineering
Director, Centre for Energy Technology
The University of Adelaide

Title:

Synergistic hybrids between concentrating solar thermal and combustion processes

Abstract –

The potential synergistic benefits from hybridising concentrating solar thermal with combustion are under-recognised and under-explored. In addition to their potential to provide continuous output, they offer a lower-cost path to firm supply of low-emissions electricity and the production of low emissions transport fuels by gasification over stand-alone systems. The seminar will give an overview of the various classes of, and options for, hybridisation with a particular focus on "direct hybrids", in which the two energy sources are harvested within a single reactor or receiver. These can be synergistic with thermal storage and also offer the potential to increase solar share. It will also explain the additional technological challenges that arise from these devices that require new understanding for reliable modelling to be possible. These include complex and coupled processes between high flux radiation and turbulent multi-phase and/or reacting flows.

Brief Biography – Professor Nathan is the founding Director of The University of Adelaide's Centre for Energy Technology. He is experienced in both the science and application of thermal energy systems. spanning solar, geothermal and the combustion of fossil and bio-fuels. He was principal leader of the Chief Design Team for the award winning fuel and combustion system for the Sydney Olympic Relay Torch and has jointly led the development of low NOx combustion technology in rotary cement kilns. His research specializes in the development and application of laser diagnostic methods to complex turbulent reacting flows.

Host: Prof. A. Steinfeld, www.prec.ethz.ch