Karlsruher Institut für Technologie

Institut für Kern- und Energietechnik

Leiter/in: Prof. Dr.-Ing. Thomas Schulenberg

Hermann-vom-Helmholtz Platz 1
76344 Eggenstein-Leopoldshafen

KIT Campus Nord | IKET | Postfach 3640 | 76021 Karlsruhe

Telefon: 0721-608-23451
Fax: 0721-608-24837
E-Mail: heide.hofmann@kit.edu
Web: www.iket.kit.edu

Bearbeiter/in: K. Niedermeier/ho
Unser Zeichen:
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Einladung zum IKET-Kolloquium

Zeit: Dienstag, 8. August 2017, 15.00 Uhr

Ort: Bibliothek des IKET, Campus Nord, Bau 420, Raum 204

Referent: Dr. Joe Coventry, Research School of Engineering, The Australian National University, Canberra, Australia

Titel: Concentrating solar thermal power: challenges and opportunities in a decarbonising global economy

Zusammenfassung:

The Paris agreement to limit the increase in global average temperature well below 2°C requires full decarbonisation of the global economy by the end of the century. In the electricity sector, PV and wind are now the lowest cost options for new build power plants, but full decarbonisation requires an energy storage solution. Concentrating solar thermal power (CSP) is a promising renewable technology because of its inherent thermal storage, but is being challenged strongly by alternatives such as pumped hydro and batteries. Achieving cost targets (e.g. Sunshot 0.06 USD/kWh) will require new technologies that can operate at higher temperature with better power cycle efficiency, such as the s-CO2 Brayton cycle. The Australian National University (ANU) is contributing to global efforts to reduce costs, with research in a range of areas including development of structural mirror panels, high efficiency sodium receivers, improved absorber coatings, and new high temperature molten chloride salt formulations. Around 75% of global GHG emissions are attributed to non-electricity sectors, and here CSP has tremendous opportunity, particularly via solar fuels and process heat. To drive such processes, ANU is investigating a sodium boiler technology coupled to a phase-change storage system. Current solar chemistry research at ANU includes gasification of biomass in supercritical water, high-temperature chemical energy storage based around manganese-oxide redox cycling, and capture of carbon dioxide from air via solar-driven thermochemical looping using calcium-oxide.

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