

Ph.D. Course

3 ECTS

31<sup>st</sup> March—6<sup>th</sup> April 2016

# ENERGY GENERATION AND STORAGE



Renewable energy generation is vital for a sustainable future. This course will provide a comprehensive overview of the core renewable energy technologies, focussing on the depth of research being undertaken in these areas to meet the global energy demand. An overview on this global energy landscape will be provided, followed by an emphasis on fossil fuels, solar photovoltaics, concentrated solar thermal, biomass and nuclear technologies. The thermodynamics, chemical and physical processes will be discussed followed by equal discussion into the storage and utilisation of energy. Batteries, fuel cells and hydrogen technologies will all be considered as energy storage options to address the variable nature of renewable energy sources.

This course will be run in a 1-week focussed session. Lectures will be run from 8.15 to 12.00 daily based on a textbook (*Chemistry of Sustainable Energy*, N.E. Carpenter, 2014) and supplemented with select research papers. Group activities and focussed studies will be run after lunch, directing students to further understand key current research activities in this area.

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