Overview

Building sector still plays a crucial role in total world energy consumption, thus in greenhouse gas emissions. About 40 % of global energy use in 2015 is attributed to buildings. Building-related carbon emissions constitute more than 30% of total emissions. This scenario can be explained by insufficient thermal insulation performance characteristics of existing building elements. Development of novel building materials is therefore of significance. There is a common consensus among scientists that buildings of future need not only thermally resistive materials but also multifunctional smart technologies being capable of producing clean energy to meet the latest building standards toward low/zero-carbon target. In this respect, in particular solar assisted smart materials and components, which are based on nanotechnology, stand indispensable for building sector. The course will focus on Buildings of future: Smart, low-cost and energy-efficient solutions; concepts of smart and multifunctional building materials, Solar Tree, Solar Integration in Airports, Building Integrated PV and Building Integrated PV/T systems, Thermal Modeling of BIPV and BIPVT system.

Course participants will learn these topics through lectures and tutorials. Also case studies and assignments will be shared to stimulate research motivation of participants.
The Faculty

Dr Erdem Cuce is Assistant Professor in the Department of Mechanical Engineering at Recep Tayyip Erdogan University, Turkey. His interest areas of research are solar thermal applications and photovoltaics, smart and green buildings, renewable and sustainable energy solutions for buildings. (www.erdemcuce.com)

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