

# Energy Conversion: From Materials to Mechanisms

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Summer Semester 2020

Tuesdays from 13.15 to 15.00 *via* Zoom and Moodle  
Start: 21.04.2020. Please enroll via LSF-LMU (T1PD-M)

The sustainable generation and storage of usable energy is one of the greatest challenges of the 21st century. In this course we will initially discuss the global energy landscape and traditional technologies as a starting point for the treatment of selected sustainable energy conversion strategies. The focus will be on the physicochemical foundations and recent materials developments addressing these challenges.

Emphasis will be placed on solar energy conversion with photovoltaic devices including classical semiconductor, excitonic and third generation solar cells, as well as the generation of solar fuels through photoelectrochemical and artificial photosynthesis concepts. Moreover, we will address the mechanisms and materials for electrochemical energy storage using batteries and capacitors, in addition to different types of fuel cells. It will become apparent that for many of these technologies the controlled generation of functional nanostructures is at the heart of recent and expected future progress.

