

## **Energy materials: Synthesis, Characterization and Applications**

**Shadia J. Ikhmayies**

**Al Isra University, Jordan**

The development of new and novel energy materials is critical to meet the future energy needs. It is also of crucial importance for energy applications in many areas of technology. The materials used in technologies such as batteries, supercapacitors, catalytic converters, and nuclear reactors, devices for energy conversion, energy storage, and energy efficiency are of considerable interest. In order to design and manufacture the next generation of devices, the fundamental properties of these materials must be understood from the atomic through the mesoscale.

This session focuses on materials research directed for the production of novel materials for energy conversion and sustainable, economic and secure energy supply in the future. This includes the synthesis and characterization of energy materials, and the transfer to applications. The session covers a broad range of energy-related topics including photovoltaics (PV), solar fuels, bio-mass to liquid fuels, thermoelectric materials, electrode materials for batteries, hydrogen storage, and energy saving catalysts for the chemical industry.

### **Topics will include (but will not be limited to):**

- Bulk and thin films of groups III-V and II-VI solar cell material.
- Transparent conducting oxides.
- Nanostructures used in solar cells.
- Tunable bandgap semiconductors.
- Silicon wafers, thin films and solar cells.
- H<sub>2</sub> storage materials
- Hybrid (organic/ inorganic) PV cells