

Materials for Energy

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The poster will cover current topics and recent progress in Germany in the science and technology of energy and new materials, including the nanoscale origin of macroscopic properties.

One challenge is avoiding negative effects from the current energy system on climate, environment and health and to find ways to replace fossil fuel supply.

New materials can contribute to a positive development in this direction in several ways, for instance by influencing the energy efficiency of industrial production and of household energy use (e.g., through fuel cells, catalysis, reduced friction losses), and by offering schemes to clean up harmful emissions resulting from various energy systems by contributing to more efficient harvesting of sun light, by providing thermoelectric materials to harvest energy from temperature gradients, by providing energy storage technology e.g. in batteries and for hydrogen storage, by enabling light-weight materials for transportation. Materials are central to every energy technology; the future will place increasing demands on materials performance with respect to extremes in stress, strain, temperature, pressure, chemical reactivity, photon or radiation flux, and electric or magnetic fields.