

Overview of facilities and materials for renewable energy in FBK

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In numerous application fields of the energy sector such as energy generation, green fuel production and energy and fuel storage, the research of new materials and new material functionalities plays a pivotal role for advanced and sustainable technologies. In this frame, material surface engineering by means of various coating techniques very often represents an effective development strategy to obtain the final desired characteristics of the devices or systems.

In this talk, the facilities present in FBK for thin film deposition and characterization will be presented, with a focus on the processes of deposition of thin films and nanoparticles for selected applications: the development of a solar absorber coating for solar-thermal conversion to be used for combined heat and electricity systems; of transparent and conductive thin films for transparent current collectors and electrodes; of catalyst particle-decorated powders (Mg and graphenic powders) for hydrogen storage and of a Mg-graphenic powder system for hydrogen generation by hydrolysis for portable fuel cells. Rational perspectives on the future developments in the surface engineering will be proposed.