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# Surface physics

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## Surface physics

Physical and chemical processes on the surfaces of solids are the governing factors in modern nanotechnological applications in energy economy, chemical industry or environmental protection. The work group of Surface Physics develops and applies refined experimental and theoretical methods in order to understand surface physico chemical phenomena on the fundamental research level and applies the knowledge in the development of new nanotechnologies, thus reaching out into the applied research domain. One predominant research field is the development of catalysts for energy conversion in fuel cells, in which the group has been successfully optimizing the Platinum efficiency and minimizing the resource cost of the advanced catalysts. The successes in the area of catalyst development result from a solid instrumental foundation, which covers synthesis and characterization of novel nanostructured materials and the analysis of surface physico chemical phenomena down to atomic level. Other research topics due highlighting are the research and development of sensors of non electrical observables and development of semiconductor nanostructures. During last two years the surface physics laboratory is increasingly involved in applied research and development in the field of hydrogen energy.

The Surface Physics laboratory (SPL) commands a broad range of laboratory techniques including a synchrotron beam line laboratory (the Materials Science Beamline, MSB) at the synchrotron Elettra in Italy. This research infrastructure (SPL MSB) is open to international user access as the Czech representing laboratory in the Central European Research Infrastructure Consortium (CERIC ERIC). The Surface Physics group participates in a number of international and national collaborative scientific projects and, presently, also it is a coordinator of the OPVVV pre-application project "New generation of fuel cell".

## Selected outputs

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