KEMIJSKI INŠTITUT

Vabilo na predavanje / Invitation to the Lecture

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Velika predavalnica / Kemijski inštitut, Hajdrihova 19, Ljubljana

Photocatalysts for glass functionalization, environmental remediation, hydrogen generation and CO2 reduction

The seminar will focus on the activities carried out at the Photocatalysis Lab of Khalifa University in Abu Dhabi. An overview will be given on the following topics:

- Multifunctional self-cleaning coatings based on TiO_2, WO_3 and VO_2 for building façades, allowing for VOC (volatile organic compound) abatement in the vicinity of buildings and reduction of heat transmittance between the outdoor and indoor environments as a result of their near infrared (NIR) shielding properties.
- Treatment of recalcitrant pollutants in water through photocatalysis: in situ DRIFT-MS study of ethylenediaminetetraacetic acid (EDTA) degradation, design and CFD modelling of photocatalytic microreactors implementing porous supported TiO_2-based semiconductors modified with graphene.
- Generation of hydrogen from H_2S, sour gas abundant in natural gas streams: mechanistic study and kinetic modelling of photocatalyst activity and deactivation using N-doped brookite-rutile modified with graphene and Pt; generation of hydrogen and hydrocarbons from butyric acid, present in wastewater and one of the main by-products of biological natural fermentation processes: activity study and product distribution by using TiO_2 nanotubes modified with Pt.
- CO_2 reduction in gas and liquid phase at controlled temperature and pressure *via* an in-house designed reactor operating with Cu-doped TiO_2 decorated with Pt nanoparticles and impregnated with reduced graphene oxide.

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Vljudno vabljeni / Kindly invited