



## **CALL FOR APPLICATIONS FOR POSTDOCTORAL POSITIONS IN HETEROGENEOUS CATALYSIS (m/f)**

### **Host research group**

Department for Environmental Sciences and Engineering at the National Institute of Chemistry, Ljubljana, Slovenia, is a top and internationally renowned research group in environmental protection. Its mission is to develop modern processes for water treatment along with catalytic processes in energy and production of high added-value compounds.

The department which currently consists of eight researchers, three PhD students and three research engineers, is equipped with top research equipment along with various lab- and pilot-scale reactors. More information about the research group is available at:

<https://www.ki.si/en/departments/d05-department-for-environmental-sciences-and-engineering/>

The main research focus of the department is design and development of multi-functional nanostructured and nanoshaped catalysts, applicable in the following fields: TiO<sub>2</sub> based photocatalysts for degradation of organics in water, nanoplasmonics, C-H bond activation in light alkanes, partial oxidation as well as methane and carbon dioxide valorization. Research is aimed at understanding the chemistry of these transformations, occurring over the catalyst's surface.

**Positions** (1 person for each) are available for the following topics:

### **(i) Visible light driven catalytic oxidation of pollutants from wastewater**

Application of advanced oxidation processes based with the use of catalysts is very attractive option for cleaning wastewaters that are too toxic to be treated with biological technology.

Accepted candidate will work on development, synthesis and characterization of new class of semiconductor based catalysts used in visible light driven photocatalytic degradation of pollutants in wastewater. The research will also focus on new preparation techniques for immobilization of catalytic formulations with the aim of developing continuous-flow reactor systems.

### **(ii) Low-temperature dry methane reforming**

Conversion of abundant carbon dioxide and methane to synthesis gas (i.e. dry methane reforming) provides a promising means for removal of greenhouse gases. In order to perform this reaction efficiently and selectively at low temperatures, promising heterogeneous catalysts have to be researched and fundamental understanding of their functions improved.



Accepted candidate is expected to synthesize and characterize redox catalysts containing functionalities for activation of oxidant and propane. Catalytic tests will be performed in a tubular fixed-bed reactor. Hands on experience with *in-situ* and *operando* UV-Vis and DRIFTS spectroscopic techniques to analyze the working state of the catalyst are a strong point.

## Profile

The candidate with an outstanding track record has to possess a PhD degree in chemistry (preferably with specialty in catalysis or materials science) or chemical engineering. Skills in advanced catalyst characterization and spectroscopic techniques will be an asset. Hands on experience with EPR spectroscopy is expected. He/she should be fluent in English.

The contract duration is planned for 12 months (+12 months in option). Starting date will be determined with the selected candidate. Salary basis follows national rules (~2.200 € gross salary for a research assistant).

We are offering work in a stimulating and superiorly equipped environment with a chance of personal development and promotion.

## Contact

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