

## 12<sup>th</sup> Czech-Austrian workshop: New trends in photo and electro catalysis

### Programme

**Wednesday, 1<sup>st</sup> October 2025**

**12.30 – 13.00** registration of participants

**13.00** Welcome talk (Josef Krýsa)

*Chair: Josef Krýsa*

**13.10 Keynote talk: Š. Slapničar, G. Žerjav, A. Pintar**

Utilization of Plasmonic Effects for Visible-light-driven Photocatalytic Environmental Applications

**13.40 M. M. Ballari, M. Filip Edelmannová, R. Ricka, M. Reli, K. Kočí**

Photocatalytic CO<sub>2</sub> Reduction in TiO<sub>2</sub> Slurries: Kinetics and Carbon Species Equilibrium

**14.00 M. Baudys, J. Rusek, J. Krýsa**

Photocatalytic Reduction of CO<sub>2</sub> on TiO<sub>2</sub> Based Materials

**14.20 R. Ricka, B. Trindade Barrocas, M. F. Edelmannová, M. Reli, M. Łapinski, M.**

**Conceição Oliveira, A. C. Marques, K. Kočí**

Mo-Modified CeO<sub>2</sub> and Microscaff<sup>®</sup> Composite as an Efficient Photocatalysts for CO<sub>2</sub> Photoreduction

**14.40 – 15.10** coffee break

*Chair: Albin Pintar*

**15.10 H. Krýsová, Z. Hubička, T. Imrich, M. Neumann-Spallart, J. Krýsa**

In-situ and Ex-situ Sn Doping of Hematite Photoelectrodes

**15.30 Z. Venkrbcová, Z. Hubička**

ECWR-Assisted Pulsed Reactive Sputtering for Deposition of Semiconducting Oxide Thin Films Suitable for Photocatalysis

**15.45 T. Imrich, M. Neumann-Spallart, H. Krýsová, H. Tarábková, J. Krýsa**

Extension of the (Photo)Electrochemical Working Range of WO<sub>3</sub> Electrodes to pH 8 by ALD Coverage with TiO<sub>2</sub>

**16.05 T. Blecha, P. Džik, M. Králová, M. Veselý**

Dual-phase WO<sub>3</sub> Films with Enhanced Macroporosity through Biotemplating

**16.20 B. Radová, T. Imrich, Michael Neumann-Spallart, J. Krýsa**

WO<sub>3</sub> And CuWO<sub>4</sub> Photoanodes for Photoelectrochemical Applications

**16.35 J. Jablunka, N. Kotulková, M. Filip Edelmannová, B. Trindade Barrocas, K. Kočí**

Advanced TiO<sub>2</sub> and CeO<sub>2</sub>-based Photocatalysts for CO<sub>2</sub> Reduction

**16.50 D. Varga, S. Pfaffel, J. Blaschke, H. Rabl-Wolff, D. Apaydin, D. Eder**

Bimetallic and Alloy Catalysts for Electrocatalytic Conversion of CO<sub>2</sub> to Formic Acid

**17.05** End of the session

**19.00** Dinner

## Thursday, 2<sup>nd</sup> October 2025

*Chair: Ladislav Kavan*

**8.30 Keynote talk:** P. Dzik, M. Veselý

Structure-function Optimization of Printed Photoelectrochemical Cells

**9.00** H. Krýsová, T. Imrich, H. Tarábková, P. Janda, J. Krýsa

Impact of Variations in ALD Procedure on Nanomorphology, Protecting Properties and Chemical Stability of Thin TiO<sub>2</sub> Films

**9.20** J. Rusek, M. Neumann-Spallart, H. Krýsová, T. Ohno, J. Krýsa

CuBi<sub>2</sub>O<sub>4</sub> Photocathodes for Solar-driven Reduction Reactions

**9.40** J. Štěpánek, T. Bystron, Š. Paušová

Two-step Synthesis and Characterization of CuFeO<sub>2</sub> Thin Layers for Photoelectrocatalytic Applications

**9.55** S. Pfaffel, N. Parak, D. Varga, H. Rabl-Wolff, S. Myakala, J. Blaschke, D. Apaydin, D. Eder

Formic Acid Photoelectroreforming over Bismuth Vanadate – Proof of Concept

**10.10** D. Vojvoda, J. Hnát, K. Bouzek

Electrochemical Deposition of Nickel on Porous Electrodes

**10.25 – 11.00** coffee break

*Chair: Kamila Kočí*

**11.00** M. Paidar, V. Masojídek, V. Šram

Importance of Water Quality for Water Electrolysis

**11.20** J. Volák, K. Vydrželová, P. Hladík, Š. Paušová

Development and Optimization of BiOX Photocatalysts for Environmental Pollutant Degradation

**11.40** Z. Huang, Z. Wang, H. Rabl, S. Naghdi, Q. Zhou, Y. Yu, D. Eder

How Powerful is Ligand Engineering in Enhancing (Photo)Electrocatalytic Activity of Metal-organic Frameworks?

**12.00** A. Karafiátová, J. Rusek, M. Baudys, J. Krýsa

Photocatalytic Oxidation of Organic Compounds in Air on Various TiO<sub>2</sub> Structures

**12.15** M. Králová, M. Veselá, M. Veselý, P. Dzik

Resazurin Assay for Determining the Antimicrobial Activity of Photocatalytic Surfaces: Optimization and New Findings

**12.35** End of the session

**13.00** Lunch

**14.30 – 19.00** Walk to the Thaya National Park, individual discussions

**19.00** Common dinner

**20.30** Wine degustation

## Friday, 3<sup>rd</sup> October 2025

**8.30 – 9.00 check out**

*Chair: Guenter Fafilek*

**9.00 Keynote talk: L. Kavan**

Dual Ion (Zn/Li) Battery with Water-in-Salt Electrolyte: The Emerging Alternative of Li-ion

**9.30 J. Hnát, M. Plevová, K. Bouzek**

Development of Catalyst-coated Membrane for Alkaline Water Electrolysis

**9.50 M. Carda, S. Janda, D. Budáč, M. Paidar, L. Novák, K. Bouzek**

Optimizing Tape Casting and Sintering for Advanced Solid Oxide Cell Components

**10.10 D. Budáč, V. Miloš, M. Carda, M. Paidar, K. Bouzek**

Monte Carlo Model for Simulation of Porous Composite Ceramics

**10.30 P. Janda, H. Tarábková**

Surface “Ageing” – Hidden Process Deteriorating Interfacial Properties of Solid Electrodes

**10.50 – 11.25 coffee break**

*Chair: Martin Paidar*

**11.25 G. Žerjav, A. Pintar**

Platinum on TiO<sub>2</sub>: How the Schottky Barrier Influences Photocatalytic Pathways

**11.45 D. Dvoranová, M. Malček Šimunková, K. Lušpai, M. Férová, V. Slovák, V. Lazić**

Indirect Techniques of EPR Spectroscopy as an Effective Tool in Detection of Transient Paramagnetic Species

**12.05 A. Brüger, G. Fafilek, M. Neumann-Spallart**

Phase Changes in WO<sub>3</sub> Films upon Heating and Cooling

**12.25 X. Li, I. Venkrbcová, D. Lundin, M. Čada, Z. Hubička**

Plasma Diagnostics for Reactive HiPIMS Process Control of Vanadium Oxides

**12.45 S. Patakyová, M. Kubát, P. Džik**

Hybrid Layers of Polymeric and Graphitic Carbon Nitride for Advanced Photoactive Coatings

**13.00 Final remarks (Josef Krýsa)**

**13.15 Lunch**