

*The 7th International Conference on*  
**New Photocatalytic Materials for Environment,  
Energy and Sustainability**  
**(NPM-7)**

*The 8th International Conference on*  
**Photocatalytic and Advanced Oxidation Technologies  
for the Treatment of Water, Air, Soil and Surfaces**  
**(PAOT-8)**

**FINAL PROGRAM**

**Conference Organizer: Dr. Hussain Al-Ekabi**  
**Redox Technologies, Inc. The Western University Research Park,**  
**London, Ontario, Canada**

**University of Zagreb Faculty of Geotechnical Engineering,**  
**Varaždin, Croatia**  
**July 10-13, 2023**

### **Executive Organizing Committee**

**Dr. Hussain Al-Ekabi** (Conference Organizer), Redox Technologies, Inc.,  
Canada

**Professor Ivana Grčić** (Chair), University of Zagreb, Croatia

**Professor Ivan Brnardić**, University of Zagreb, Croatia

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**Dr. Chantal Guillard**, University of Lyon, IRCELYON, France

**Professor Ottó Horváth**, University of Pannonia Center for Natural Sciences

**Dr. Krunoslav Juraić**, Institut Ruđer Bošković, Croatia

**Professor Alex Kuvarega**, University of South Africa, South Africa

**Professor Zsuzsanna László**, University of Szeged, Hungary

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**Professor Yao-Tung Lin**, National Chung Hsing University, Taiwan

**Professor Baojun Liu**, Guizhou University, P. R. China

**Professor Nataša Novak Tušar**, National Institute of Chemistry/ University of Nova Gorica, Slovenia

**Dr. Luka Pavic**, Ruđer Bošković Institute, Zagreb, Croatia

**Professor Albin Pintar**, National Institute of Chemistry, Slovenia

**Professor Xie Quan**, Dalian University of Technology, China

**Professor Diana Sannino**, University of Salerno, Italy

**Dr. Andraž Šuligoj**, National Institute of Chemistry, Slovenia

**Professor Domagoj Vrsaljko**, University of Zagreb, Croatia

**Dr. Gregor Žerjav**, National Institute of Chemistry, Slovenia

**Professor Shujuan Zhang**, Nanjing University, China

**PL: Stands for Plenary Lecture (50 min including Q&A)**

**IL: Stands for Invited Lecture (30 min including Q &A)**

**ST: Stands for Short Talk (20 min Including Q &A)**

## **Monday, July 10, 2023**

08:30 – 10:00      **On-site Registration and Coffee**

10:00 – 10:20      **Introductory Remarks**

### **Session 1: Plenary Session**

10:20 – 11:10      **Design of photo-Fenton-like catalysts for removal of  
PL                      contaminants of emerging concern under sunlight**  
**Nataša Novak Tušar<sup>1,4\*</sup>, Andraž Šuligoj,<sup>1,3</sup> Ivalina Trendafilova,<sup>2</sup>  
Ksenija Maver,<sup>1</sup> Albin Pintar,<sup>1</sup> Nataša Zabukovec Logar<sup>1,4</sup>**

<sup>1</sup>National Institute of Chemistry, Ljubljana, Slovenia

<sup>2</sup>Institute of Organic Chemistry with Center of Phytochemistry,  
Bulgarian Academy of Sciences, Sofia, Bulgaria;

<sup>3</sup>Faculty of Chemistry and Chemical Technology, University of  
Ljubljana, Ljubljana, Slovenia

<sup>4</sup>University of Nova Gorica, Nova Gorica, Slovenia

11:10 – 12:00      **Reactor design, modeling aspects and process  
PL                      intensification in micro and macro-scale reactors for  
advanced oxidation**  
**Gianluca Li Puma**  
Environmental nanocatalysis & photoreaction engineering, department  
of chemical engineering, loughborough university, loughborough, united  
kingdom

12:00 – 13:30      **Lunch Break**

### **Session 2: Advances in Photocatalysis – I**

13:30 – 14:00      **3D printed equipment for chemical processes**  
IL                      **Domagoj Vrsaljko, Ivan Karlo Cingesar, Marijan-Pere Marković,  
Ivana Grčić**  
Faculty of Chemical Engineering and Technology, University of Zagreb,  
Croatia

- 14:00 – 14:30  
IL
- Environmental-friendly Visible-light-driven N-TiO<sub>2</sub>/PMMA composite for Efficient Photocatalytic Disinfection: Optimization and Kinetic Modeling**  
**Li-Ting Yena<sup>2</sup>, Chih-Huang Weng<sup>3,\*</sup>, Jing-Hua Tzenga<sup>4</sup>, Ying-Chen Chen<sup>1</sup>, Astrid R. Jacobson<sup>2</sup>, Yao-Tung Lin<sup>1,\*</sup>**  
<sup>1</sup> Department of Soil and Environmental Sciences, National Chung Hsing University, Taiwan  
<sup>2</sup> Department of Plants, Soils, and Climate, Utah State University, Logan, UT, USA  
<sup>3</sup> Department of Civil Engineering, I-Shou University, Kaohsiung, Taiwan  
<sup>4</sup> Department of Civil and Environmental Engineering, University of Delaware, Newark, DE, USA
- 14:30 – 15:00  
IL
- Immobilised, transparent, photocatalysts based on modified titania nanostructured thin films for pollutant degradation in water and air**  
**Andreja Gajović<sup>1,\*</sup>, Tihana Čizmar<sup>1</sup>, Vedran Kojić<sup>1</sup>, Mario Boháč<sup>1</sup>, Krešimir Salamon<sup>1</sup>, Krunoslav Juraić<sup>1</sup>, Lucija Radetić<sup>2</sup>, Jan Marčec<sup>2</sup>, Ivana Grčić<sup>2</sup>**  
<sup>1</sup>Ruđer Bošković Institute, Bijenička cesta 54, Zagreb, Croatia  
<sup>2</sup>University of Zagreb, Faculty of Geotechnical Engineering, Varaždin, Croatia
- 15:00 – 15:30
- Coffee Break**
- 15:30 – 16:00  
IL
- Transparent titania thin films for photovoltaic and photocatalytic applications**  
**Krunoslav Juraić<sup>1</sup>**  
<sup>1</sup>Ruđer Bošković Institute, Zagreb, Croatia
- 16:00 – 16:20  
ST
- The study of solar photocatalytic processes in optimal reactor configurations based on benzotriazoles degradation within *silico* toxicity assessment**  
**L. Radetić\*, J. Marčec, I. Brnardić, I. Grčić**  
<sup>\*</sup> University of Zagreb, Faculty of Geotechnical Engineering, Department of Environmental Engineering
- 16:20 – 16:40  
ST
- A clean process for palladium recovery from a spent Pd/TiO<sub>2</sub> catalyst. Combination of mildly acidic leaching and photodeposition on ZnO nanoparticles**

**Marica Muscetta<sup>a\*</sup>, Giulio Pota<sup>a</sup>, Giuseppe Vitiello<sup>a</sup>, Samar Al Jitan<sup>b</sup>, Giovanni Palmisano<sup>b</sup>, Roberto Andreozzi<sup>a</sup>, Raffaele Marotta<sup>a</sup>, Ilaria Di Somma<sup>c</sup>**

<sup>a</sup>Dipartimento di Ingegneria Chimica, dei Materiali e della Produzione Industriale, Università di Napoli “Federico II”, Napoli, Italia

<sup>b</sup>Department of Chemical Engineering, Center for Membranes and Advanced Water Technology and Research and Innovation Center on CO<sub>2</sub> and Hydrogen, Khalifa University, Abu Dhabi, United Arab Emirates

<sup>c</sup>Istituto di Scienze e Tecnologie per l’Energia e la Mobilità Sostenibili (CNR), Napoli, Italia

**Tuesday, July 11, 2023**

08:30 – 09:00      **Registration**

### **Session 3: Water Purification**

09:00 – 09:30      **What future for water treatment by photocatalysis?**

IL

**C. Guillard**

University Lyon, University Claude Bernard, CNRS, IRCELYON, UMR5256, Villeurbanne, France

09:30 – 10:00      **Application of Photocatalytic Composite Membranes for Dairy Wastewater Treatment**

IL

**Elias Jigar Sisay<sup>1,2\*</sup>, Gábor Veréb<sup>2</sup>, Szabolcs Kertész<sup>2</sup>, Gangasalam Arthanareeswaran<sup>3</sup>, Gokula Krishnan<sup>3</sup>, Zsuzsanna László<sup>2,4</sup>**

<sup>1</sup>Doctoral School of Environmental Sciences, University of Szeged, Hungary

<sup>2</sup>Department of Biosystems Engineering, Faculty of Engineering, University of Szeged, Szeged, Hungary

<sup>3</sup>Membrane Research Laboratory, Department of Chemical Engineering, National Institute of Technology, India

<sup>4</sup> Institute of Environmental Science and Technology, University of Szeged, Szeged, Hungary

10:00 – 10:30      **Preparation and application of g-C<sub>3</sub>N<sub>4</sub>-based catalysts for photocatalytic treatment of various pollutants in aqueous systems**

IL

**Ottó Horváth<sup>1</sup>, Shoaib Mukhtar<sup>1</sup>, Erzsébet Szabó-Bárdos<sup>1</sup>, Dien Nguyen Thi<sup>2</sup>, Truong Nguyen Xuan<sup>2</sup>**

<sup>1</sup>Research Group of Environmental and Inorganic Photochemistry,  
Center for Natural Sciences, University of Pannonia, Veszprém,  
Hungary

<sup>2</sup>School of Chemical Engineering, Hanoi University of Science and  
Technology, Vietnam

10:30 – 11:00

**Coffee Break**

11:00 – 11:30  
IL

**Heterogeneous electro-Fenton for advanced water  
treatment**

**Xie Quan\*, Peike Cao**

Key Laboratory of Industrial Ecology and Environmental Engineering  
(Ministry of Education, China), School of Environmental Science and  
Technology, Dalian University of Technology, Dalian, PR China  
No.2 Linggong Road, Ganjingzi District, Dalian City, Liaoning  
Province, P.R.C.

11:30 – 12:00  
IL

**Nickel modified ZnO nanoparticles as a novel photocatalyst  
for treating water polluted with pharmaceuticals**

**Andraž Šuligoj<sup>1,2\*</sup>, Miha Ravbar<sup>1</sup>**

<sup>1</sup>Faculty of Chemistry and Chemical Technology, University of Ljubljana,  
Ljubljana, Slovenia

<sup>2</sup>National Institute of Chemistry, Ljubljana, Slovenia

12:00 – 12:30  
IL

**Process optimization for the photocatalytic removal of  
acetamiprid**

**Lucija Bogdan, Ivana Elizabeta Zelić, Vesna Tomašić**

University of Zagreb, Faculty of Chemical Engineering and  
Technology, Zagreb, Croatia

12:30 – 13:00  
IL

**CuO@TiO<sub>2</sub>: an efficient photocatalyst for the  
photodegradation of diclofenac**

**Tihana Čižmar<sup>1</sup>, Mario Boháč<sup>1</sup>, Lucija Radetić<sup>2</sup>, Ivana Grčić<sup>2</sup>,  
Andreja Gajović<sup>1</sup>**

<sup>1</sup> Ruđer Bošković Institute, Zagreb, Croatia

<sup>2</sup> University of Zagreb, Faculty of Chemical Engineering and  
Technology, Zagreb, Croatia

13:00 – 14:00

**Lunch Break**

14:00 – 17:00

OS-Mi project workshops (program will be announced during  
June)

Visit to Laboratories

## Wednesday, July 12, 2023

8:30 – 9:00      **Registration**

### **Session 4: Air Treatment**

9:00 – 9:30  
IL      **Real scale application of visible light responsive photocatalytic paints for indoor air quality improvement**  
**Th. Maggos<sup>1</sup>, P. Panagopoulos<sup>1</sup>, C. Theodorou<sup>2</sup>, A. Nikolakopoulos<sup>2</sup>, E. Skliri<sup>3</sup>, E. Gagaoudakis<sup>3</sup>, G. Kiriakidis<sup>3</sup>, V. Binas<sup>3</sup>**  
<sup>1</sup>Atmospheric Chemistry and Innovative Technologies Laboratory/INRASTES/NCSR Demokritos Athens, Greece  
<sup>2</sup>VITEX S.A Aspropyrgos, Greece  
<sup>3</sup>Institute of Electronic Structure & Lasers/FORTH, Heraclion, Crete, Greece

9:30 – 10:00  
IL      **Photocatalytic removal of volatile organic pollutants on TiO<sub>2</sub> nanotubular arrays: Mass transport limitations**  
**J. Rusek, M. Baudys, V. Fila, J. Krýsa**  
Department of Inorganic Technology, University of Chemistry and Technology, 28 Prague, Czech Republic

10:00 – 10:30  
IL      **Pt/TiO<sub>2</sub> Photocatalytic Nanotube Array Film Prepared by Anode Oxidation and Under-Potential Shock Method for NH<sub>3</sub> Decomposition**  
**Kwang-Cheol Lee**  
Photonics Convergence Energy Materials Research Center, Korea Photonics Technology Institute (KOPTI), Rep. of Korea

10:30 – 11:00      **Coffee Break**

### **Session 5: Materials – I**

11:00 – 11:30  
IL      **Photo or electrochemical production of high value chemicals over low dimension materials**  
**Baojun Liu**  
College of Resource and Environmental Engineering, Guizhou University, Guiyang, P. R. CHINA



11:30 – 12:00  
IL **Rational Design of Hierarchical Alloy-Containing Z-Scheme Catalytic Materials toward Effective Conversion of Nitric Oxide Toxic Species under Mild Conditions**  
**Xinyong Li**  
Dalian University of Technology, P.R. of China

12:00 – 12:30  
IL **Bi-Functional CeFeCu Trimetal Oxide/Bi<sub>2</sub>O<sub>3</sub> S-Scheme Heterojunction for Photocatalytic Degradation of Sulfamethoxazole Under Visible Light Irradiation**  
**Alex T. Kuvarega\*, Potlako J. Mafa, Mope E. Malefane, Bhekie B. Mamba**  
Institute for Nanotechnology and Water Sustainability, College of Science, Engineering and Technology, University of South Africa, Johannesburg, South Africa

12:30 – 13:00  
IL **Rational Design of Multinary Spinel Hierarchical Nanomicrospheres toward Highly Efficient Catalytic Conversions**  
**Shiyang Fan and Xinyong Li**  
Dalian University of Technology, P.R. of China

13:00 – 14:00 **Lunch Break**

## **Session 6: Materials – II**

14:00 – 14:30  
IL **Ag/TiO<sub>2</sub> nanostructured film produced by Supersonic Cluster Beam Deposition: morphology, thermal evolution and the effect of different substrates**  
**Vincenzo Balzano<sup>1</sup>, Emanuele Cavaliere<sup>1</sup>, Mattia Fanetti<sup>2</sup>, Sandra Gardonio<sup>2</sup>, Luca Gavioli<sup>1</sup>**  
<sup>1</sup> Interdisciplinary Laboratories for Advanced Materials Physics (i-LAMP), Dipartimento di Matematica e Fisica, Università Cattolica del Sacro Cuore, Brescia, Italy  
<sup>2</sup> Materials Research Laboratory, University of Nova Gorica, Ajdovščina, Slovenia

14:30 – 15:00  
IL **Advanced Au/TiO<sub>2</sub> plasmonic catalysts for visible-light triggered photocatalytic oxidation**  
**Albin Pintar, Gregor Žerjav**  
Department of Inorganic Chemistry and Technology, National Institute of Chemistry, Ljubljana, Slovenia

- 15:00 – 15:30  
IL **The height of the Schottky barrier versus the photo/thermal catalytic activity of TiO<sub>2</sub>+Pt catalysts**  
**Gregor Žerjav, Albin Pintar**  
Department of Inorganic Chemistry and Technology,  
National Institute of Chemistry, Ljubljana, Slovenia
- 15:30 – 15:50 **More than meets the eye: Impact of (micro)structure on electrical and catalytic properties of oxide glass-(ceramics)**  
**Luka Pavic**  
Division of Materials, Chemistry, Ruđer Bošković Institute, Zagreb,  
Croatia
- 15:50 – 19:00 **Coffee & Free Time**
- 19:00 – 21:00 **Gala Dinner**

**Thursday, July 13, 2023**

**Session 7: Advances in Photocatalysis – II**

- 9:30 – 10:00  
IL **ALD TiO<sub>2</sub> and SnO<sub>2</sub> films: structure, morphology, and protective properties**  
**H. Krysova<sup>1</sup>, H. Tarabkova<sup>1</sup>, J. Krysa<sup>2</sup>**  
<sup>1</sup>J. Heyrovský Institute of Physical Chemistry of the Czech Academy of Sciences, Praha 8, Czech Republic  
<sup>2</sup>Department of Inorganic Technology, University of Chemistry and Technology Prague, Praha 6., Czech Republic
- 10:00 – 10:20  
ST **Photocatalytic application of novel ash-like dark grey graphitic carbon nitride coupled with magnesium-bismuth oxide on oxytetracycline degradation under visible light**  
**Potlako J. Mafa<sup>\*</sup>, Mope E. Malefane, Bhekio B. Mamba, Alex T. Kuvarega**  
Institute for Nanotechnology and Water Sustainability, College of Science, Engineering and Technology, University of South Africa, Johannesburg, South Africa
- 10:20 – 10:40  
ST **Triple S/Z-scheme Heterojunction for visible-light driven degradation of antibiotics: Experimental Investigation**  
**Mope E. Malefane<sup>\*</sup>, Potlako J. Mafa, Muthumuni Managa, Thabo T. I. Nkambule, Alex T. Kuvarega<sup>\*</sup>**

Institute for Nanotechnology and Water Sustainability, College of  
Science, Engineering and Technology, University of South Africa,  
Florida, 1709, Johannesburg, South Africa

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Mope E. Malefane and Alex T. Kuvarega

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|---------------|--|
| 10:40 – 12:00 | <b>Coffee Break</b> and Poster section (posters will be placed in hall all days, but this will be a time scheduled for discussion) |
| 12:00 – 13:00 | Round table discussion: Future of photocatalysis   |
| 13:00 – 14:00 | <b>Lunch Break</b>   |
| 14:00 – 17:00 | Project workshop: Demonstration of air purification in the photocatalytic wind tunnel  |
| 17:00 – 17:10 | Concluding remarks and adjournment   |