

*The 2<sup>nd</sup> International Conference on*  
**New Photocatalytic Materials for Environment,  
Energy and Sustainability**  
**(NPM -2)**

**FINAL PROGRAM**

**Organizer**

**Redox Technologies, Inc.**

**Local organizer**



NATIONAL INSTITUTE  
OF CHEMISTRY

**National Institute of Chemistry, Ljubljana, Slovenia**  
**July 2-6, 2017**

## **International Scientific Committee**

**Professor Nataša Novak Tušar (Conference Chair)**, National Institute of Chemistry and University of Nova Gorica, Slovenia

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

**Professor Sotiris E. Pratsinis**, Swiss Federal Institute of Technology (ETH Zurich), Switzerland

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

**Dr. Hynd Remita**, Université Paris-Sud, France

**Professor Elena Selli**, Università degli Studi di Milano, Italy

**Dr. Adrian M.T Silva**, Porto University, Portugal

**Professor Sammy W. Verbruggen**, University of Antwerp, Belgium

**Professor Nataša Zabukovec Logar**, National Inst. of Chemistry/University of Nova Gorica, Slovenia

**Dr. Mingmei Zhang**, Dalian University of Technology, China

## **Conference Organizer & Correspondence**

**Dr. Hussain Al-Ekabi**, Redox Technologies, Inc., Western University Research Park, Canada

## Sunday July 2, 2017

3:00 - 7:00 pm On-site Registration at the National Institute of Chemistry

## Monday July 3, 2017

PL: stands for plenary lecture (40-45min), KL: stands for keynote lecture (30min)

IL: Stands for invited lecture (25min); ST: stands for short talk (15 min)

7:30am – 5:00pm Onsite Registration

8:45 – 9:00 am Opening Ceremony

Conference Chair: Prof. Nataša Novak Tušar

Director of National Institute of Chemistry: Prof. Gregor Anderluh

President of Slovenian Zeolite Association: Prof. Nataša Zabukovec Logar

President of Slovenian Chemical Society: Prof. Venčeslav Kaučič

### Session I: Advances in Photocatalysis

*Session Chair: Nataša Novak Tušar*

9:00 – 9:45 am PL	<b>Tuning of Photoelectrochemical Activity by Altering Catalytic Binding Site Charge Density: Practical Applications for Wastewater Treatment</b> Cody E. Finke, Justin T. Jasper, William A. Goddard III, and <u>Michael R. Hoffmann</u> California Institute of Technology, Pasadena, California, USA
9:45 – 10:10 am IL	<b>Impact of the Experimental Conditions and of the Physicochemical Parameters of TiO<sub>2</sub> on the Photocatalytic Transformation of Acetic Acid</b> Son Ngo, Frederic Dappozze, <u>Chantal Guillard*</u> Université Claude Bernard Lyon 1, CNRS, IRCELYON, Villeurbanne, France
10:10 – 10:30 am	<b>Coffee Break</b>
10:30 – 11:00 am KL	<b>Transient Phenomena in Photocatalysis, as Studied by Ultrafast FTIR Measurements</b> Yaron Paz Technion, Haifa, Israel
11:00 – 11:25 am IL	<b>FTIR Spectroscopy with Isotopic Exchange: A Powerful Technique to Elucidate Photocatalytic Reaction Mechanisms</b> <u>Mohamad El-Roz</u> , Frederic Thibault-Starzyk

	Normandie University, ENSICAEN, UNICAEN, CNRS, Caen, France
<b>11:25 – 11:50 am</b> <b>IL</b>	<b>In Situ Spectroscopy Investigation of the Surface-interface Charge-Transfer Process over Highly Efficient Solar Harvesting Photoactive Systems</b> <b>Xinyong Li</b> * <sup>1,2</sup> <sup>1</sup> Dalian University of Technology, Dalian, China <sup>2</sup> Department of Chemical Engineering, Perth, Western Australia
<b>11:50 am – 12:15 pm</b> <b>IL</b>	<b>Atomic Level Structural Characterisation of Titania Based Immobilised Photocatalytic Materials</b> <b>G. Drazic</b> <sup>1</sup> , <b>A. Abram</b> <sup>2</sup> , <b>M. Krivec</b> <sup>3</sup> <sup>1</sup> National Institute of Chemistry, Ljubljana, Slovenia <sup>2</sup> Jozef Stefan Institute, Ljubljana, Slovenia <sup>3</sup> CTR Carinthian Tech Research, Villach, Austria
<b>12:15 – 1:30 pm</b>	<b>Lunch</b>
<b>1:30 am– 1:55 pm</b> <b>IL</b>	<b>Scalable Flame Aerosol Synthesis of Highly Efficient Atomically-Dispersed Pd on TiO<sub>2</sub> for NO<sub>x</sub> Removal by Solar Light</b> <b>Sotiris E. Pratsinis</b> Institute of Process Engineering, ETH Zurich, Switzerland
<b>1:55 – 2:10 pm</b> <b>ST</b>	<b>Analysis of Adsorption and Decomposition of Odour Components and Tar Contents in Tobacco Smoke on Non-Woven Fabric-Supported TiO<sub>2</sub></b> <b>Tsuyoshi Ochiai</b> <sup>1,2,3</sup> , <b>Shoko Tago</b> <sup>2</sup> , <b>Mio Hayashi</b> <sup>2</sup> , <b>Yasuhisa Akutsu</b> <sup>1</sup> , <b>Morio Nagata</b> <sup>4</sup> and <b>Akira Fujishima</b> <sup>2,3</sup> <sup>1</sup> Kanagawa Institute of industrial Science and Technology, Japan <sup>2</sup> Photocatalyst Group, KISTEC, Japan <sup>3</sup> Photocatalysis International Research Center, Tokyo University of Science, Japan <sup>4</sup> Graduate School of Chemical Sciences and Technology, Tokyo University of Science, Japan
<b>2:10 – 2:25 pm</b> <b>ST</b>	<b>Fractal Charge Carrier Kinetics in TiO<sub>2</sub></b> <b>Fabian Sieland</b> * <sup>1</sup> , <b>Jenny Schneider</b> <sup>1</sup> , <b>Detlef W. Bahnemann</b> <sup>1,2</sup> <sup>1</sup> Leibniz University Hannover, Hannover, Germany <sup>2</sup> Saint-Petersburg State University, Saint-Petersburg, Russia

## Session II: New Photocatalytic Materials – I

*Session Chair: Nataša Zabukovec Logar*

2:25 – 2:55 pm KL	<b>Studies on the Adsorption and Photocatalytic Decomposition of Dyes on Hybrid TiO<sub>2</sub>/Graphene Materials</b> <u>A. W. Morawski</u> , A. Wanag, E. Kusiak-Nejman, J. Kapica, L. Kowalczyk, R. J. Wrobel West Pomeranian University of Technology, Szczecin, Poland
2:55 – 3:20 pm IL	<b>Increased Photocatalytic Properties of TiO<sub>2</sub> by Bimetallic Nanoparticles Deposition</b> <u>C. Colbeau-Justin</u> , A. L. Luna Barrón, M. G. Méndez Medrano, H. Remita CNRS UMR 8000, Université Paris Sud, Orsay, France
3:20 – 3:35 pm	<b>Coffee Break</b>
3:35 – 4:00 pm IL	<b>Transient Absorption and Time Resolved Photoluminescence Investigations of the Charge Carriers Photogenerated in Photocatalytic Materials</b> Maria Vittoria Dozzi, Ivan Grigioni, <u>Elena Selli</u> Università degli Studi di Milano, Milano, Italy
4:00 – 4:25 pm IL	<b>Oxides Doping for Photocatalysis: Pros and Cons</b> Gianfranco Pacchioni Università di Milano-Bicocca, Milano, Italy

## Session III: Visible Light Photocatalysis – I

*Session Chair: Natasa Zabukovec Logar*

4:25 – 4:55 pm KL	<b>Novel Approaches towards Enhanced Charge Separation and Visible Light Utilization in TiO<sub>2</sub> Photocatalysis</b> Albin Pintar National Institute of Chemistry, Ljubljana, Slovenia
4:55 – 5:20 pm IL	<b>Conducting Polymer Nanostructures for Photocatalysis under Visible-Light</b> <u>Hynd Remita</u> <sup>1</sup> , Dita Floresyona, <sup>1</sup> Srabanti Ghosh <sup>1</sup> , Natalie A. Kouamé <sup>1</sup> , Laurence Ramos <sup>2</sup> , Samy Remita, <sup>1,3</sup> Alexandre Dazzi, <sup>1</sup> Ariane Deniset-Besseau, <sup>1</sup> Fabrice Goubard, <sup>4</sup> Pierre-Henri Aubert <sup>4</sup> <sup>1</sup> Laboratoire de Chimie Physique, UMR 8000-CNRS, Université Paris-Sud, Orsay, France <sup>2</sup> Laboratoire Charles Coulomb UMR 5221-CNRS, Université Montpellier 2, Montpellier, France <sup>3</sup> Département CASER, Ecole SITI, Conservatoire National des Arts et Métiers,

	<p>CNAM, Paris Cedex 03, France  <sup>4</sup>Laboratoire de Physicochimie des Polymères et Interfaces (LPPI), Université de Cergy-Pontoise Cergy-Pontoise Cedex, France</p>
<p><b>5:20– 5:45 pm</b>  <b>IL</b></p>	<p><b>G-C<sub>3</sub>N<sub>4</sub> Based Photocatalysts with Z-Scheme for Efficient Visible-Light Induced Photocatalytic Degradation of Pollutants</b>  <u>Xie Quan*</u> and Yan Gong  Dalian University of Technology, Dalian, China</p>
<p><b>5:45 – 6:10 pm</b>  <b>IL</b></p>	<p><b>Tunable and Broadband Plasmonic Photocatalysis with Pure Visible and Solar Light Activity</b>  <u>Sammy W. Verbruggen</u><sup>1,2</sup>  <sup>1</sup> Sustainable Energy, Air &amp; Water Technology (DuEL), University of Antwerp, Antwerp, Belgium  <sup>2</sup> Center for Surface Chemistry &amp; Catalysis, KU Leuven, Belgium</p>
<p><b>6:10– 6:35 pm</b>  <b>IL</b></p>	<p><b>Influence of Fe-Content on Visible-Light Photoactivity of Bi-Pyrochlores</b>  <u>Matjaz Valant</u>, Metka Bencina  University of Nova Gorica, Slovenia</p>
<p><b>6:35 – 6:50</b></p>	<p><b>Facile Template-Free Synthesis of CaFe<sub>2</sub>O<sub>4</sub> Hierarchically Hollow Microspheres: Applications in Visible Light-Driven Degradation of Gaseous 1,2-Dichlorobenzene</b>  <u>Zhifan Yin</u><sup>1</sup>, Xinyong Li<sup>1,2*</sup>  <sup>1</sup> Dalian University of Technology, Dalian, China.  <sup>2</sup> Department of Chemical Engineering, Perth, Western Australia</p>
<p><b>6:50 – 8:00 pm</b></p>	<p><b>Reception / Poster session</b></p>

## Tuesday July 4, 2017

### Session IV: New Photocatalytic Materials – II

*Session Chair: Albin Pintar*

<p><b>8:30 – 8:55 am</b>  <b>IL</b></p>	<p><b>Custom-Made Photocatalysts: Playing with the Properties of Semiconductor Nanomaterials</b>  Olinda C. Monteiro  Universidade de Lisboa, Lisboa, Portugal</p>
<p><b>8:55 – 9:20 am</b>  <b>IL</b></p>	<p><b>Hollow Structured Materials in Photocatalysis</b>  <u>Klara Hernadi</u></p>

	University of Szeged, Szeged, Hungary
<b>9:20 – 9:45 am</b> <b>IL</b>	<b>New Photoactive Materials Based on Transitional Metal Oxides Doped with Rare Earth Metal Ions</b> <b><u>Maria Cristina Paganini</u>, Chiara Gionco, Elio Giamello</b> Universita di Torino, Torino, Italy
<b>9:45 – 10:10 am</b> <b>IL</b>	<b>Carbon-based Photocatalytic Materials</b> <b><u>Cláudia G. Silva</u>, Joaquim L. Faria, <u>Adrián M. T. Silva</u></b> Universidade do Porto, Porto, Portugal
<b>10:10 – 10:30 am</b>	<b>Coffee Break</b>
<b>10:30 – 10:55 am</b> <b>IL</b>	<b>How DFT Can Help the Experimentalists for a Rational Design of New Photocatalytic Materials for Solar-To-Chemical Energy Conversion</b> <b><u>Moussab Harb</u><sup>*</sup> and Luigi Cavallo</b> King Abdullah University of Science and Technology (KAUST), Thuwal, Kingdom of Saudi Arabia (KSA)

## Session V: Water Oxidation/Splitting

*Session Chair: Albin Pintar*

<b>10:55 – 11:25 am</b> <b>KL</b>	<b>From a Confined Multidimensional Nanostructured Environment to a Microspace: Alternative Solutions for Advanced Photocatalytic Methods in Wastewater Treatment and Selective Redox Photocatalysis</b> <b><u>Juan Carlos Colmenares</u><sup>*</sup>, A. Lewalska-Graczyk, S. Navarro, V. Nair</b> Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland
<b>11:25 – 11:50 am</b> <b>IL</b>	<b>Applications of Titanium Dioxide Nanotubes for Photocatalytic Splitting of Water and inactivation of Pathogens in Water</b> <b><u>Mano Misra</u>, York R. Smith and Krista Carlson</b> University of Utah, Salt Lake City, Utah, USA
<b>11:50 -12:15 pm</b> <b>IL</b>	<b>Enhanced Visible Light Water Splitting Via Inhibition of Hydrogen-Oxygen Recombination</b> <b>Gongxuan Lu</b> Lanzhou Institute of Chemical Physics, Chinese Academy of Sciences, China
<b>12:15 -1:30 pm</b>	<b>Lunch Break</b>

1:30 – 1:55 pm IL	<b>Towards More Efficient BiVO<sub>4</sub> Photoanode for PEC Water Oxidation through Doping and Codoping</b> <b>Xin Zhao, <u>Zhong Chen</u></b> Nanyang Technological University, Singapore
1:55 – 2:10 pm ST	<b>Improved Photochemical Water Splitting by V-Doped Ta<sub>3</sub>N<sub>5</sub> Sensitized/Protected with Polyaniline</b> <b>Thanh-Dong Pham, <u>Byeong-Kyu Lee</u>*</b> University of Ulsan, Ulsan, Republic of Korea

## Session VI: Water Treatment

*Session Chair: Urska Lavrencic Stangar*

2:10 – 2:50 pm PL	<b>More than 25 Years of Photocatalytic Oxidation Studies of Aliphatic Alcohols: Do we Understand the Mechanism?</b> <b>Johannes Melcher and <u>Detlef Bahnemann</u></b> Leibniz University Hannover, Hannover, Germany
2: 50 – 3:15 pm IL	<b>Photocatalytic and Photolytic Degradation of Nitrofurantoin: A Widely Used Drug</b> <b>Erzsébet Szabó-Bárdos<sup>1</sup>, Andrea Cafuta<sup>2</sup>, <u>Ottó Horváth</u><sup>1</sup>, Péter Hegedűs<sup>1</sup>, Orsolya Fónagy<sup>1</sup>, Sandra Babić<sup>2</sup>, Irena Škorić<sup>3</sup></b> <sup>1</sup> University of Pannonia, Veszprém, Hungary <sup>2</sup> Dept. of Analytical Chemistry, University of Zagreb, Zagreb, Croatia <sup>3</sup> Dept. of Organic Chemistry, University of Zagreb, Zagreb, Croatia
3:15 – 3:30 pm	<b>Coffee Break</b>
3:30 – 3:45 pm ST	<b>The Influence of Different TiO<sub>2</sub> Crystal Structures on Performance of TiO<sub>2</sub>/Reduced Graphene Oxide Composites in Photocatalytic Oxidation of Aqueous Bisphenol A Solution</b> <b><u>Gregor Žerjav</u>, Muhammad Shahid Arshad, Petar Djinović, Albin Pintar</b> National Institute of Chemistry, Ljubljana, Slovenia
3:45 – 4:00 pm ST	<b>Contribution of Cu and Zr to the Properties of TiO<sub>2</sub> for Photocatalytic Water Treatment</b> <b><u>Olena Pliekhova</u><sup>1</sup>, Iztok Arcon<sup>1,2</sup>, Natasa Novak Tusar<sup>4</sup>, <u>Urska Lavrencic Stangar</u><sup>1,3*</sup></b> <sup>1</sup> University of Nova Gorica, Nova Gorica, Slovenia <sup>2</sup> Jozef Stefan Institute, Ljubljana, Slovenia <sup>3</sup> Faculty of Chemistry and Chemical Technology, University of Ljubljana, Ljubljana, Slovenia <sup>4</sup> National Institute of Chemistry, Ljubljana, Slovenia



## Session VII: Reactors

*Session Chair: Urska Lavrencic Stangar*

4:00 – 4:25 pm IL	<b>Multiphysics Investigation of Photocatalytic Reactors</b> <b><u>Siegfried Denys</u>, Jelle Roegiers, Jeroen van Walsem</b> University of Antwerp, Antwerp, Belgium
4:25 – 4:50 pm IL	<b>Investigation on Photocatalytic Degradation of Selected Pollutants Using Bench-Scale Reactors</b> Anna Zielińska-Jurek, Izabela Wysocka, Zuzanna Bielan, Piotr Jurek, Andreas Hänel, <b><u>Jan Hupka</u></b> Gdansk University of Technology, Gdansk, Poland
4:50 – 5:05 pm ST	<b>Photocatalytic Degradation of Dichloroacetic Acid in a Black Body Reactor as a Standard Method to Compare the Activities of Photocatalysts</b> <b><u>Lena Megatif</u><sup>1</sup>, Ralf Dillert<sup>1,2</sup>, Detlef W. Bahnemann<sup>1,3</sup></b> <sup>1</sup> Leibniz Universität Hannover, Hannover, Germany <sup>2</sup> Gottfried Wilhelm Leibniz Universität Hannover, Hannover, Germany <sup>3</sup> Laboratory Saint-Petersburg State University, Saint-Petersburg, Russia
5:05 – 5:20 pm ST	<b>Predictive Model for UV Light Irradiation and PCO Reaction Kinetics in a Photocatalytic Parallel Flow Tube Reactor</b> <b><u>Jelle Roegiers</u>, Jeroen van Walsem, Siegfried Denys</b> University of Antwerp, Antwerp, Belgium

## Session VIII: Synthesis & Photoactive Composite Material - I

*Session Chair: Goran Drazic*

5:20– 5:45 pm IL	<b>Modelling the Synthesis Pathway of ZnO Shape-Tailored Photocatalysts Using the Box-Behnken Approach</b> <b><u>Zsolt Pap</u><sup>1,2,3</sup>, Zoltán Kovács<sup>2</sup>, Lucian Baia<sup>2,3</sup>, Klára Hernádi<sup>4</sup></b> <sup>1</sup> Institute of Envir. Science and Tech., University of Szeged, Hungary <sup>2</sup> Institute for Interdisciplinary Research on Bio-Nano-Sciences, Babeş-Bolyai University, Cluj-Napoca, Romania <sup>3</sup> Faculty of Physics, Babeş-Bolyai University, Cluj-Napoca, Romania <sup>4</sup> Faculty of Science and Informatics, Department of Applied and Environmental Chemistry, University of Szeged, Szeged, Hungary
5:45 – 6:10 pm IL	<b>Interfacial Charges Transfer Mechanism and Synergetic Chemical Effect of SnS<sub>2</sub>-based Nanocomposites and Their Enhanced Photocatalytic Activity</b> <b><u>Mingmei Zhang</u>, Xinyong Li*</b> Dalian University of Technology, Dalian, China

<p><b>6:10 – 6:25 pm</b> ST</p>	<p><b>Synthesis and Characterization of Ferrite-TiO<sub>2</sub> Nanocomposites for Application in Wastewater Remediation under Solar Light Irradiation</b>  <u>Radu-G. Ciocarlan</u><sup>1</sup>, Elena M. Seftel<sup>1,2</sup>, Myrjam Mertens<sup>2</sup>,  Natasia Novak Tusar<sup>3,4</sup>, Pegie Cool<sup>1</sup>  <sup>1</sup> University of Antwerpen (CDE), Antwerpen, Belgium  <sup>2</sup> VITO Flemish Institute for Technological Research, Boeretang, Belgium  <sup>3</sup> National Institute of Chemistry, Ljubljana, Slovenia  <sup>4</sup> University of Nova Gorica, Nova Gorica, Slovenia</p>
<p><b>6:25– 6:40 pm</b> ST</p>	<p><b>Photocatalytic Properties of Nanocomposites in the System Nano-Sized Titanium (IV) Oxides – Zeolites</b>  <u>E.N. Domoroshchina</u><sup>1</sup>, G.M. Kuz'micheva<sup>1</sup>, G.V. Kravchenko<sup>1</sup>,  A.E. Baranchikov<sup>2</sup>  <sup>1</sup> Moscow Technological University, MITHT, Russia  <sup>2</sup> Russian Academy of Sciences, Moscow, Russia</p>

## Wednesday, July 5, 2017

### Session IX: Air Treatment

*Session Chair: Andraz Suligoj*

<p><b>8:30 – 8:55 am</b> IL</p>	<p><b>Silica Supported Photocatalysts for Air and Water Cleaning: Benefits and Drawbacks</b>  Nataša Novak Tušar<sup>1,2</sup>  <sup>1</sup>National Institute of Chemistry, Ljubljana, Slovenia  <sup>2</sup>University of Nova Gorica, Nova Gorica, Slovenia</p>
<p><b>8:55 – 9:10 am</b> ST</p>	<p><b>Indoor Air Purification by a Commercialized Photocatalytic Oxidation Stand-alone Devices: Efficiency and Safety</b>  <u>Cécile Raillard</u><sup>1</sup>, Henrietta Essie Whyte<sup>1</sup>, Vanessa Maroga Mboula<sup>1</sup>,  Frédéric Thévenet<sup>2</sup>, Nadine Locoge<sup>2</sup>, Valérie Héquet<sup>1</sup>  <sup>1</sup>GEPEA, UMR CNRS 6144, IMT-Atlantique, Nantes Cedex 3, France  <sup>2</sup>SAGE, IMT Lille Douai, Douai Cedex, France</p>
<p><b>9:10 – 9:25 am</b> ST</p>	<p><b>Photocatalyst Characteristics of Cu/Ag/Ce, N and S Co-doped Titania and Their Photodegradation Kinetics of Air pollutant at Visible Light Irradiation</b>  Chiu-Hsuan Lee<sup>1</sup>, Ching-Yuan Chang<sup>1</sup>, and <u>Je-Lueng Shie</u><sup>*,2</sup>  <sup>1</sup> National Taiwan University, Taipei, Taiwan  <sup>2</sup> National I-Lan University, Yi-Lan, Taiwan</p>

<p><b>9:25 – 9:40 am</b> ST</p>	<p><b>Photocatalytic Oxidation for Indoor Air Quality in Hospital Operating Rooms: Study of Isoflurane Degradation</b> <b>Henrietta Essie Whyte<sup>1</sup>, Cécile Raillard<sup>1</sup>, Pascal Mismaque<sup>2</sup>, Albert Subrenat<sup>1</sup>, Valérie Héquet<sup>1</sup></b> <sup>1</sup> GEPEA UMR CNRS 6144, IMT-Atlantique, Nantes Cedex 3, France <sup>2</sup> ATA Medical, Orvault, France</p>
<p><b>9:40 – 9:55 am</b> ST</p>	<p><b>Nd-TiO<sub>2</sub> Photocatalyst for Removal of VOCs in Air under Visible Light</b> <b>D. Sanz, R. Mallada, P. Pina</b> University of Zaragoza, Zaragoza, Spain</p>

## Session X: Disinfection and Self Cleaning Surfaces

*Session Chair: Urška Lavrencic Stangar*

<p><b>9:55 – 10:20 am</b></p>	<p><b>To Study the Visible-Light-Responsive Photocatalytic Inactivation of Microbial Cell Using Combined Ultrahigh Resolution Full-Field X-Ray Microscopy and Atomic Force Microscope</b> <b>Jing-Hua Tzeng<sup>1</sup>, Chih-Huang Weng<sup>2</sup>, Yao-Tung Lin<sup>1*</sup></b> <sup>1</sup> National Chung Hsing University, Taichung, Taiwan <sup>2</sup> I-Shou University, Kaohsiung City, Taiwan</p>
<p><b>10:20 – 10:40 am</b></p>	<p><b>Coffee Break</b></p>
<p><b>10:40– 11:05 am</b> IL</p>	<p><b>Transparent Thin Films with Self-Cleaning Efficiency and Improved Durability Prepared at Low Temperatures</b> <b>Urška Lavrenčič Štangar<sup>1,2</sup></b> <sup>1</sup> University of Ljubljana, Ljubljana, Slovenia <sup>2</sup> University of Nova Gorica, Nova Gorica, Slovenia</p>
<p><b>11:05 – 11:30 am</b> IL</p>	<p><b>Photocatalytic Cancer Cells Destruction with Multifunctional Gadolinium-Doped Mesoporous TiO<sub>2</sub> Microbeads</b> <b>Roghayeh Imani<sup>1,2,3</sup>, Ralf Dillert<sup>1,4</sup>, Detlef. W. Bahnemann<sup>1,5</sup>, Meysam Pazoki<sup>2,6</sup>, Tomaž Apih<sup>7</sup>, Venko Kononenko<sup>8</sup>, Neža Repar<sup>8</sup>, Veronika Kralj-Iglič<sup>9</sup>, Gerrit Boschloo<sup>2</sup>, Damjana Drobne<sup>8</sup>, Tomas Edvinsson<sup>10</sup>, Aleš Iglič<sup>3</sup></b> <sup>1</sup> Gottfried Wilhelm Leibniz Universität Hannover, Hannover, Germany <sup>2</sup> Physical Chemistry division, Uppsala University, Uppsala, Sweden <sup>3</sup> Faculty of Electrical Engineering, University of Ljubljana, Ljubljana, Slovenia <sup>4</sup> Laboratory of Nano and Quantum Engineering, Hannover, Germany <sup>5</sup> Saint-Petersburg State University, Saint-Petersburg, Russia <sup>6</sup> Structural Chemistry division, Uppsala University, Uppsala, Sweden <sup>7</sup> Jožef Stefan Institute, Ljubljana, Slovenia <sup>8</sup> Department of Biology, University of Ljubljana, Ljubljana, Slovenia <sup>9</sup> Biophysics Laboratory, University of Ljubljana, Ljubljana, Slovenia</p>

	<sup>10</sup> Solid State Physics division, Uppsala University, Uppsala, Sweden
11:30 – 11:55 am IL	<b>Structural, Morphological and Photocatalytic Characterization of Photoreactive Hybrid Thin Films with Tunable Wetting Properties</b> <u>László Janovák</u> , <u>Ágota Deák</u> , <u>Imre Dékány</u> University of Szeged, Szeged, Hungary
11:55 am -12:20 pm IL	<b>Noble Metal-Modified Faceted Anatase Particles with Enhanced Photocatalytic Activities for Decomposition of Chemical and Microbiological Pollutants</b> <u>Zhishun Wei</u> <sup>1</sup> , <u>Marcin Janczarek</u> <sup>1,2</sup> , <u>Maya Endo</u> <sup>1</sup> , <u>Bunsho Ohtani</u> <sup>1</sup> and <u>Ewa Kowalska</u> <sup>1</sup> Institute for Catalysis (ICAT), Hokkaido University, Sapporo, Japan <sup>2</sup> Gdansk University of Technology, Gdansk, Poland
12:20 – 1:30 pm	<b>Lunch</b>
1:30 – 1:55 pm IL	<b>Synthesis of Anatase TiO<sub>2</sub> Nanoparticles by Polymeric Template Method from Inorganic Titanium Sources</b> <u>Manuel Ojeda</u> , <u>Jin Xuan</u> , <u>Huizhi Wang</u> and <u>M. Mercedes Maroto-Valer</u> Heriot-Watt University, Edinburgh, United Kingdom
1:55 – 2:10 pm	<b>UV and Visible Light Induced Photochromism of Photocatalytic Cu-TiO<sub>2</sub> Hybrid Nanomaterial</b> <u>David M. Tobaldi</u> <sup>1</sup> , <u>Robert C. Pullar</u> <sup>1</sup> , <u>Nejc Rozman</u> <sup>2</sup> , <u>João A. Labrincha</u> <sup>1</sup> , <u>Andrijana Sever Škapin</u> <sup>2</sup> <sup>1</sup> CICECO–Aveiro Institute of Materials, University of Aveiro, Aveiro, Portugal <sup>2</sup> Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia
2:10 – 2:25 pm ST	<b>Numerical Analysis of Combustion Phenomena Using Blended Biooil and Biodiesel in 400MW Boiler for the Reduction of GHGs</b> <u>Jindo Chung</u> <sup>1</sup> , <u>Jihye Lee</u> , <u>Jangwoo Kim</u> <sup>2</sup> , <u>Jaewe Jo</u> , <u>Jongcheol Kang</u> <sup>1</sup> Department of Environmental Engineering, Hoseo University, Asan, Korea <sup>2</sup> Department of Digitaldisplay Engineering, Hoseo University, Asan, Korea Department of Climate Change Fusion Tech., Hoseo University
2:25 - 4:00 pm	<b>Free Time</b>
4:00 – 10:30 pm	<b>Trip and Dinner in Postojna Cave (sponsored by National Institute of Chemistry)</b>

## Thursday, July 6, 2017

### Session XI: Visible Light Photocatalysis – II

Session Chair: *Nataša Novak Tušar*

8:30 – 8:45 am ST	<b>Tailored Heter- and Nano- Junction between Transition Metal Oxides and Chalcogenides for Solar Energy Utilization and Conversion</b> <u>Shiyong Fan</u> <sup>1</sup> , Xinyong Li* <sup>1,2</sup> <sup>1</sup> Dalian University of Technology, Dalian, China <sup>2</sup> Department of Chemical Engineering, Perth, Western Australia
8:45 – 9:00 am ST	<b>Study on Surface Modification of Titanium Dioxide Selected Transition Metals for Visible Light Photocatalysis</b> <u>Andraž Šuligoj</u> , <sup>1</sup> Matjaž Mazaj, <sup>1</sup> Iztok Arčon, <sup>2</sup> Goran Dražič, <sup>1</sup> Urška Lavrenčič Štangar <sup>2,§</sup> and Nataša Novak Tušar <sup>1,2</sup> <sup>1</sup> National Institute of Chemistry, Ljubljana, Slovenia <sup>2</sup> University of Nova Gorica, Nova Gorica, Slovenia <sup>§</sup> University of Ljubljana, Ljubljana, Slovenia
9:00 – 9:15 am ST	<b>Investigation of Zinc Ferrite as a Visible-Light Active Photocatalyst</b> <u>Arsou Arimi</u> <sup>1</sup> , Lena Megatiff <sup>1</sup> , Luis Granone <sup>1</sup> , Ralf Dillert <sup>1,2</sup> , Detlef W. Bahnemann <sup>1,3</sup> <sup>1</sup> Institut für Technische Chemie, Leibniz Universität Hannover, Germany <sup>2</sup> Laboratorium für Nano- und Quantenengineering, Gottfried Wilhelm Leibniz Universität Hannover, Hannover, Germany <sup>3</sup> Laboratory “Photoactive Nanocomposite Materials”, Saint-Petersburg State University, Saint-Petersburg, Russia
9:15 – 9:30 am ST	<b>Preparation of Nanostructured CuO Photocatalyst on Porous Support</b> Lev Matoh University of Ljubljana, Ljubljana, Slovenia
9:30 – 9:45 am ST	<b>Ag<sub>3</sub>PO<sub>4</sub> Based Photocatalysts for Efficient Visible-Light Induced Photocatalytic Degradation of Pollutants</b> <u>Henry Agbe</u> , Nadeem Raza, and Vasant Ramachandran Kumar. University of Cambridge, Cambridge, United Kingdom
9:45 – 10:00 am ST	<b>Codoped Titania Thin Films, Highly Efficient under Visible Light Illumination</b> Boštjan Žener, Romana Cerc Korošec

	University of Ljubljana, Ljubljana, Slovenia
10:00 – 10:15 am	<b>Coffee Break</b>

## Session XII: Synthesis & Photoactive Composite Material - II

*Session Chair: Albin Pintar*

10:15 – 10:30 am ST	<p><b>Chemical Structure in Cu-Modified TiO<sub>2</sub>-SiO<sub>2</sub> Nanocomposites Calcined at 500 °C for 1 Hour in Air</b></p> <p><u>Tihana Čižmar</u><sup>1</sup>, Iztok Arčon<sup>1,2</sup>, Urška Lavrenčič Štangar<sup>1,3</sup></p> <p><sup>1</sup> University of Nova Gorica, Nova Gorica, Slovenia  <sup>2</sup> Jozef Stefan Institute, Ljubljana, Slovenia  <sup>3</sup> University of Ljubljana, Ljubljana, Slovenia</p>
10:30 – 10:45 am ST	<p><b>Partial Photocatalytic Oxidation of Glycerol in Water over CNT Based Catalysts</b></p> <p>Tomaž Pirman, <u>Venkata D. B. C. Dasireddy</u> and Blaz Likozar  National Institute of Chemistry, Ljubljana, Slovenia</p>
10:45 – 11:00 pm ST	<p><b>Vanadium Doped Nanosized Titanium (IV) Oxide: Preparation, Characterization and Photocatalytic Properties</b></p> <p><u>A. A. Gainanova</u><sup>1</sup>, G. M. Kuz'micheva<sup>1</sup>, E. V. Khramov<sup>2</sup>,  <u>R. G. Chumakov</u><sup>2</sup></p> <p><sup>1</sup> Moscow Technological University, Moscow, Russia  <sup>2</sup> National Research Center "Kurchatov Institute", Moscow, Russia</p>
11:00 – 11:15 pm ST	<p><b>Nanocellulose/TiO<sub>2</sub> Composites: Preparation, Characterization and Application in Photocatalytic Degradation of a Potential Endocrine Disruptor, Mefanamic Acid, from Aqueous Media</b></p> <p><u>Manali Rathod</u><sup>1,2</sup>, Pareshkumar G Moradeeya<sup>3</sup>, Soumya Haldar<sup>1</sup>, and Shaik Basha<sup>3*</sup></p> <p><sup>1</sup> CSIR-Central Salt &amp; Marine Chemicals Research Institute, Bhavnagar, Gujarat, India  <sup>2</sup> Academy of Scientific and Innovative Research (AcSIR), CSIR-CSMCRI, Bhavnagar, Gujarat, India  <sup>3</sup> CSIR-National Environmental Engineering Research Institute, Hyderabad, Telangana, India</p>
11:15 am – 12:30 pm	<b>Lunch/ Adjourn</b>

### Posters

<b>Bacterial Adhesion on Photoreactive Hybrid Layers with Tunable Wetting Properties</b>
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**Ágota Deák<sup>1</sup>, Klemen Bohinc<sup>2</sup>, Karmen Godič Torkar<sup>2</sup>, Anže Abram<sup>3</sup>, Imre Dékány<sup>1</sup> and László Janovák<sup>1</sup>**

<sup>1</sup> University of Szeged, Szeged, Hungary

<sup>2</sup> University of Ljubljana, Ljubljana, Slovenia

<sup>3</sup> 'Jožef Stefan' Institute, Ljubljana, Slovenia

**Understanding the Optical and Electronic Properties of Ternary Fe<sup>3+</sup>/C/S-Doped Anatase TiO<sub>2</sub> Nanoparticles within the GGA + U Approach**

**Francis Opoku<sup>1</sup>, Krishna Kuben Govender<sup>2</sup>, Cornelia Gertina Catharina Elizabeth van Sittert<sup>3</sup>, Penny Poomani Govender<sup>1</sup>**

<sup>1</sup> University of Johannesburg, Johannesburg, South Africa

<sup>2</sup> Council for Scientific and Industrial Research, Cape Town, South Africa

<sup>3</sup> Research Focus Area for Chemical Resource Beneficiation, North-West University, South Africa

**Application of TiO<sub>2</sub>/WO<sub>3</sub> Composites in the Photocatalytic Degradation of Dye Molecules**

**Eszter Orbán<sup>1</sup>, Zsolt Pap<sup>3,4,5</sup>, Gábor Kovács<sup>2,3,4</sup>, Klára Hernádi<sup>2</sup>, Virginia Danciu<sup>1</sup>, Lucian Baia<sup>3,4</sup>**

<sup>1</sup> Faculty of Chemistry and Chemical Engineering, Babeş-Bolyai University, Cluj-Napoca, Romania

<sup>2</sup> Faculty of Science and Informatics, University of Szeged, Szeged, Hungary

<sup>3</sup> Faculty of Physics, Babeş-Bolyai University, Cluj-Napoca, Romania

<sup>4</sup> Institute for Interdisciplinary Research on Bio-Nano-Sciences, Cluj-Napoca, Romania

**Wetting Properties of Roughened Conducting Polymer Thin Films with Photocatalytic Activity Using Visible Light**

**Imre Dékány, Ágota Deák, András M. Varga, Csaba Janáky, László Janovák**

University of Szeged, Szeged, Hungary

**Methods for Enhancement of Efficiency of Heterogeneous Photocatalysis**

**Orsolya Fónagy, Ottó Horváth, Erzsébet Szabó-Bárdos**

University of Pannonia, Veszprém, Hungary

**Preparation of Nitrogen and Fluorine Co-Doped TiO<sub>2</sub> Catalyst**

**Ottó Horváth, Antónia Papp, István Pikó, Erzsébet Szabó-Bárdos**

University of Pannonia, Veszprém, Hungary

**The Ionic Liquid-Assisted Electrochemical Synthesis of TiO<sub>2</sub> Nanotubes: The Effect of Ionic Liquids on Morphology and Photoactivity**

**Justyna Łuczak<sup>1</sup>, Paweł Mazierski<sup>2</sup>, Wojciech Lisowski<sup>3</sup>, Adriana Zaleska-Medynska<sup>2</sup>**

<sup>1</sup> Gdańsk University of Technology, Gdańsk, Poland

<sup>2</sup> University of Gdańsk, Gdańsk, Poland

<sup>3</sup> Institute of Physical Chemistry, Polish Academy of Science, Warszawa, Poland

**The IL-assisted Solvothermal Synthesis of TiO<sub>2</sub> Spheres: The Effect of Ionic Liquid Cation on the Morphology and Photoactivity of TiO<sub>2</sub>**

**Marta Paszkiewicz-Gawron<sup>1</sup>, Justyna Łuczak<sup>2</sup>, Marta Długokęcka<sup>2</sup>, Ewelina Grabowska<sup>1</sup>, Beata Bajorowicz<sup>1</sup>, Adriana Zaleska-Medynska<sup>1</sup>**

<sup>1</sup> University of Gdańsk, Gdańsk, Poland

<sup>2</sup> Gdańsk University of Technology, Gdańsk, Poland

### **Mesoporous Nanocrystalline TiO<sub>2</sub> for Sustainable and Environmental Photocatalysis**

**V.V. Shvalagin, N.I. Ermokhina, N.S. Andryushina, R.Yu. Barakov, P.A. Manoryk, S.Ya. Kuchmiy, A.M. Puziy\***

Institute of Physical Chemistry of NAS of Ukraine, Kyiv, Ukraine

\*Institute of Sorption and Problems of Endoecology of NAS of Ukraine, Kyiv, Ukraine

### **Preparation and Visible Light Photocatalytic Activity of Perovskite -Type KNbO<sub>3</sub> Modified with CdS and Bi<sub>2</sub>S<sub>3</sub> Quantum Dots**

**Beata Bajorowicz<sup>1</sup>, Joanna Nadolna<sup>1</sup>, Ewa Kowalska<sup>2</sup>, Zhishun Wei<sup>2</sup>, Bunsho Ohtani<sup>2</sup>, Marta Paszkiewicz-Gawron<sup>1</sup>, Adriana Zaleska-Medynska<sup>1</sup>**

<sup>1</sup> University of Gdansk, Gdansk, Poland

<sup>2</sup> Institute for Catalysis, Hokkaido University, Sapporo, Japan

### **Antibacterial and Photocatalytically Active Titania-Zirconia-Silica Thin Films**

**Nives Vodišek<sup>1</sup>, Urška Lavrenčič Štangar<sup>2,1</sup>**

<sup>1</sup> University of Nova Gorica, Nova Gorica, Slovenia

<sup>2</sup> University of Ljubljana, Ljubljana, Slovenia

### **Photocatalytic production of value-added chemicals from biomass**

**Valeriia Maslova, Stefania Albonetti, Francesco Basile**

SINCHEM, University of Bologna, Department of Industrial Chemistry "Toso Montanari", Via le del Risorgimento, 4, 40136, Bologna, Italy

### **Photochromic Printing Ink Based on Photocatalysis as UV Dosimeter**

**Erika Švara Fabjan<sup>1</sup>, Marta Klanjšek Gunde<sup>2</sup>, Petra Drnovšek<sup>3</sup>, Luka Škrlep<sup>1</sup>, Andrijana Sever Škapin<sup>1</sup>**

<sup>1</sup> Slovenian National Building and Civil Engineering Institute, Ljubljana, Slovenia

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

<sup>3</sup> Faculty of Natural Sciences and Engineering, Department of Textiles, Graphic Arts and Design, Ljubljana, Slovenia

### **Titanium Dioxide Catalysed Photodegradation of Diclofenac**

**Sara Piçarra, M. Emília Azenha, Hugh Burrows**

Departamento de Química, Universidade de Coimbra, Portugal