The 15th International Conference on

TiO_2 Photocatalysis: Fundamentals and Applications

(TiO_2-15)

FINAL PROGRAM

Town & Country Resort, San Diego, California

November 15-18, 2010

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Jimmy Yu, Chinese University of Hong Kong
Orfan Zahraa, Institut National Polytechnique de Lorraine (INPL), France
Pengyi Zhang, Tsinghua University, China
Jincai Zhao, Chinese Academy of Sciences, China

Conference Correspondence

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Monday, November 15, 2010

PL: Plenary Lecture (40 Min)
IL: Invited Lecture (25 Min)
ST: Short Talk (15 Min)

8:30 – 8:35 **Welcoming Remark**
David Ollis
North Carolina State University, USA

Session I

Modified Photocatalysis

Chair: Pierre Pichat

8:35 – 9:15 (PL) **Dendrimers as Light Harvesting Photosensitizers of TiO_2**
Marye Anne Fox
Chancellor, University of California, San Diego, USA

9:15 – 9:40 (IL) **Photo-electrochemical Activity of Multi-Layered BiO_x-TiO_2/Ti Electrodes: Solar Fuels Production**
Hyunwoong Park,[1,2] Ayoung Bak,[1] Yong Yoon Ahn,[1] Jina Choi,[2] and Michael R. Hoffmannn[2]*
[1]School of Physics and Energy Science, Kyungpook National University, Daegu, Korea
[2]W.M.Keck Laboratories, California Institute of Technology, Pasadena, CA, USA

9:40 – 10:05 (IL) **Microwave Effects on Metal-Oxide Nanomaterials: ZnO, First Generation TiO_2 and Second Generation N-doped TiO_2 Specimens**
Satoshi Horikoshi,[1] Masahiko Abe,[1,2] Alexei V. Emeline,[3] and Nick Serpone [4]
[1]Research Institute for Science and Technology, Tokyo University of Science, Japan
[2]Department of Pure and Applied Chemistry in Faculty of Science Tokyo University of Science, Japan
[3]V.A. Fock Research Institute of Physics, St. Petersburg State University, St. Petersburg, Russia
[4]Gruppo Fotochimico, Dipartimento di Chimica Organica, Universita di Pavia, , Pavia, Italia

10:05 – 10:30 **Coffee Break**

Session II

Photocatalysis in Water: Applications (1)

Chair: Detlef Bahemann

10:30 – 10:55 (IL) **Solar Photocatalytic Treatment of Printing Industrial Wastewaters: From Laboratory to Industrial Scale**

José Colina-Márquez[a] and Fiderman Machuca-Martínez[b]*

[a]Department of Chemical Engineering, Universidad de Cartagena, Cartagena-Colombia

[b]*Group of Advanced Oxidation Process - GAOX, School of Chemical Engineering, Universidad del Valle, Cali-Colombia

10:55 – 11:20 (IL) **Large Scale TiO_2 Photocatalytic Installation for Wastewater Purification**

P. Brożek, G. Suski, D. Dolat, A. W. Morawski

West Pomerania University of Technology, Szczecin, Institute of Chemical and Environmental Engineering, Department of Water Technology and Environment Engineering, Szczecin, Poland

11:20 – 11:45 (IL) **Photocatalytic Nanomaterials for Solar-Driven Water Disinfection**

Jimmy C. Yu

Department of Chemistry, The Chinese University of Hong Kong, Shatin, Hong Kong, China

11:45 – 12:00 (ST) **Ageing of Photocatalytic Coatings under Water Flow**

Josune Olabarrieta, Pablo Benguria, Jose Antonio Ibañez, Oscar Santa Coloma, Lorette Scifo

Labein-Tecnalia Environment Unit, C/ Geldo – Parque Tecnológico de Bizkaia, Derio, Spain

12:00 – 1:30 **Lunch Break**

Session III

Photocatalysis in Water: Applications (2)

Chair: Jan Hupka

1:30 - 1:55(IL) **Photocatalytic Oxidation of Gallic Acid Using TiO_2 Irradiated by UV-LED**

E.López[1], P.Vázquez[1], A. Garduño[2], M. A. Valenzuela[1], J.M. de la Rosa[2]

[1]Lab. Catálisis y Materiales, ESIQIE-Instituto Politécnico Nacional, México D.F., México

[2]Lab. Láser, SEPI-ESIME-Instituto Politécnico Nacional, México D.F., México

1:55 - 2:20(IL) **Heterogeneous Decomposition of Perfluorooctanoic Acid (PFOA) by In_2O_3 and its Mechanism**

Pengyi Zhang*, Xiaoyun Li, Zhenmin Li, Shao Tian
State Key Joint Laboratory of Environment Simulation and Pollution Control, Tsinghua University, Beijing, China

2:20 - 2:35(ST) **Photocatalytic Degradation of Pharmaceuticals in the Presence of Various Environmental Parameters**

Saioa Zorita, Ohiane Monzón, Lorette Scifo, Pablo Benguria, Oscar Santa Coloma
Labein-Tecnalia Environment Unit, C/ Geldo – Parque Tecnológico de Bizkaia, Derio, Spain

2:35 - 2:50(ST) **Selective Reduction of Nitrate to Dinitrogen in Ground Water Utilizing Commercial Titanium Dioxide Photocatalysts**

Kyle Doudrick[1], Oihane Monzón[2], Alex Mangonon[1], Paul Westerhoff[1]
[1]Arizona State University, Tempe, AZ, USA
[2]Labein-Tecnalia, Parque Tecnológico de Bizkaia, Bizkaia, Spain

2:50 - 3:05(ST) **TiO_2/Chitosan Films: Photocatalytic Oxidation of Aliphatic Acids**

Ivana Grčić, Zvonimir Katančić, Dinko Vujević, Natalija Koprivanac
Faculty of Chemical Engineering and Technology, University of Zagreb, Zagreb, Croatia

3:05 - 3:30 **Coffee Break**

Session IV

Photocatalysis in Air : Applications

Chair: David Ollis

3:30 - 3:55(IL) **A Review of the Use of Photocatalysis in Air Purification for Indoor Air**

Stephen O. Hay
United Technologies Research Center, E. Hartford, CT, USA

3:55 - 4:20(IL) **Performance of a Full-Sized Photocatalytic Air Cleaner: Removal of VOCs and Aldehydes under Realistic Indoor Conditions**

Mohamad Sleiman[1], Laurent Molins[2], Catherine Jacquiod[2] and Hugo Destaillats[1,3]
[1]Lawrence Berkeley National Laboratory, Berkeley, California, USA
[2]Saint Gobain Quartz, Nemours, France
[3]Arizona State University, Tempe, Arizona, USA

4:20 - 4:45(IL) **Development of a New Photocatalytic System for the Treatment of Odors and Corrosive Compounds Generated in Wastewater Treatment Plants**
Benigno Sánchez, Raquel Portela and Silvia Suárez
CIEMAT-PSA, Environmental Applications of Solar Radiation, Madrid, Spain

4:45 - 5:10(IL) **Photocatalytic Degradation Process of Organic Substances by TiO_2-Zeolite Composite on a Conventional Glass Cloth**
A. Yasumori, T. Kishi and Y. Takayama
Department of Materials Science and Engineering, Tokyo University of Science, Japan

5:10 - 5:35(IL) **Photocatalysis: Some Gas Phase Purification Aspects**
Orfan Zahraa
Laboratoire Réactions et Génie de Procédés (LRGP), UPR 3349 CNRS, Nancy-Université, ENSIC, F-54001 NANCY, France

6:00 - 7:30 **Poster Session/ Reception**

Tuesday, November 16, 2010

Session V

Photocatalysis in Water: Fundamentals

Chair: Claudio Minero

8:30 - 8:55(IL) **Learning about Photocatalysis Fundamentals from the Use of Probe Molecules, other AOPs and Scavengers**
Rosario Enriquez[1,2], Alexander G. Agrios[1], Estelle Mietton[1], Pierre Pichat[1]
[1]"Photocatalyse et Environnement", CNRS/Ecole Centrale de Lyon (STMS), Ecully CEDEX, France
[2]Ingenieria Ambiantal, Universidad del Mar, Puerto Angel, Oaxaca, Mexico

8:55 - 9:20(IL) **Morphology-Photocatalytic Activity Relationships for Shape Controlled TiO_2 Nanoparticles Obtained by Hydrothermal Methods**
Valter Maurino, Claudio Minero, Marco Minella
Dipartimento di Chimica Analitica, Università di Torino, Torino, Italy

9:20 - 9:45(IL) **The Role of Surface (Photo) Chemistry in Photocatalysis**
Detlef Bahnemann,[1] D. Friedmann,[2] C. Mendive[1]
[1]Institut für Technische Chemie, Leibniz Universität Hannover, Hannover, Germany
[2]ARC Centre for Functional Nanomaterials, School of Chemical Sciences and Engineering, The University of New South Wales, Sydney, Australia

9:45 - 10:10(IL) **Photocatalytic Degradation of Humic Substances: Polydispersity Effects and Polyelectrolyte Adsorption**
Ceyda S.Uyguner Demirel, and Miray Bekbolet
Bogazici University, Institute of Environmental Sciences, Istanbul Turkey

10:10 - 10:30 **Coffee Break**

10:30 - 10:45(ST) **Optical Properties in the Visible Range of Original Titanium Oxide Nanoparticles Synthesized by Laser Pyrolysis**
P. Simon[1], Hussein Melhem[4], B. Pignon[1], B.Miao[1], A.M. Flank[2], S. Marguet[1], V. Guyot Ferreol[5], J. F. Tranchant[5], S. Coste-Leconte[3], Y. Leconte[1], J. Bouclé[4], B. Ratier[4], C. Reynaud[1], N. Herlin-Boime[1]
[1]Service des Photons, Atomes et Molécules, Laboratoire Francis Perrin (CEA-CNRS URA 2453), Gif/Yvette Cedex, France
[2]LUCIA Beam Synchrotron Soleil, L'Orme des Merisiers, Gif/Yvette cedex, France
[3]INSTN-UESMS, Gif/Yvette Cedex, France
[4]Institut XLIM – UMR 6172, Université de Limoges/CNRS, Limoges, France
[5]LVMH Recherche, Parfums & Cosmétiques, Département Innovation Matériaux et Technologies, Saint Jean de Braye

Session VI

Photocatalysis: Catalyst Synthesis(1)

Chair: Yaron Paz

10:45 - 11:10(IL) **Development of Highly Functional TiO2 Thin Film Materials by a RF Magnetron Sputtering Method and their Applications in the Production of H2 from H2O and Dye-Sensitizer-free Thin Film Solar Cells—**
Masakazu Anpo*, Masaya Matsuoka, Masato Takeuchi
Osaka Prefecture University, Sakai, Osaka, Japan

11:10 - 11:35(IL) **Design and Fabrication of Titania Photocatalysts: Revisiting Principles and Mechanism of Titania Photocatalysts**
Bunsho Ohtani
Catalysis Research Center, Hokkaido University, Sapporo, Japan

11:35 - 12:00(IL) **Micro Structuration of Photocatalysts for Improved Efficiency**
Claudio Minero, Fabrizio Sordello, Valter Maurino, Clara Duca
Dept. Analytical Chemistry, University of Torino, Torino, Italy

12:00 - 12:25(IL) **Heterogeneous Photocatalysis in the Service of Materials Synthesis**

Krishnan Rajeshwar and Norma R. de Tacconi
Center for Renewable Energy Science & Technology (CREST), The University of Texas at Arlington, Arlington, TX, USA

12:25 - 1:30 **Lunch Break**

Session VII

Photocatalysis for Biochemical and Biological Oxidations

Chair: David Ollis

1:30 - 1:55(IL) **Decontamination of Bioaerosols by UV-A Photocatalysis: Bactericidal, Virucidal and Sporicidal Aspects at the Frontier between Photocatalysis and Microbiology**

Sébastien Josset[1], Florence Goulhen-Chollet[2], Marie-Claire Lett[2], Nicolas Keller[1], Valérie Keller[1]
Laboratory of Materials, Surfaces and Processes for Catalysis (LMSPC), CNRS and Strasbourg University, Strasbourg cedex, FRANCE
Laboratory Molecular Genetic, Genomic, Microbiology (GMGM), CNRS and Strasbourg University, Strasbourg, FRANCE

1:55 - 2:20(IL) **Photocatalytic Disinfection of Water and Surfaces**

D. Alrousan, J. A. Byrne*, P.S.M. Dunlop, P. Fernandez-Ibanez[a], E. Magee, C. Sheeran
Nanotechnology and Integrated BioEngineering Centre, University of Ulster, Northern Ireland, United Kingdom
[a]Plataforma Solar de Almería –CIEMAT, Tabernas, Almería, Spain

2:20 - 2:45(IL) **Photocatalytic Degradation of Chemical and Biological Warfare Agents: Applications to Self-Decontaminating Textiles and Paints**

Mathieu Grandcolas[1], Alain Louvet[2], Nicolas Keller[1], Valérie Keller[1]
[1] Laboratoire des Matériaux, Surfaces et Procédés pour la Catalyse (LMSPC), Université de Strasbourg, UMR 7515 CNRS; 25 rue Becquerel, 67087 Strasbourg cedex France
[2]Délégation Générale à l'Armement, Centre d'Etudes du Bouchet, BP3, 91710 Vert-Le-Petit France

2:45 – 3:00(ST) **Pilot Scale Solar Photocatalytic Disinfection of Water**

Pilar Fernández-Ibáñez*; M. Inmaculada Polo-López, Irene García- Fernández
Plataforma Solar de Almería-CIEMAT, Almeria, Spain

3:00 - 3:30 **Coffee Break**

Session VIII

Photocatalysis: Reactor Design and Process Integration

Chair: Valter Maurino

3:30 - 3:55(IL) **Optimization of Radiation Absorption in Solar Photocatalytic Reactors for Environmental Application: Implications for Reactor Design**

Jose Colina-Marquez[1], Fiderman Machuca-Martinez[2], Gianluca Li Puma[3]
[1]Universidad de Cartagena, Chemical Engineering Department, Cartagena, Colombia
[2]Universidad del Valle, Chemical Engineering School, GAOX Group, Cali, Colombia
[3]Photocatalysis & Photoreaction Engineering, Department of Chemical Engineering, Loughborough University, Loughborough, United Kingdom

3:55 - 4:10 (ST) **Photo- and Bioactivity of Ag/Au-Tio$_2$ Nanoparticles Prepared in Microemulsion System**

A. Zaleska[1], A. Zielińska-Jurek[1], E. Kowalska[2], J.W. Sobczak[3], B. Ohtani[4]
[1]Gdansk University of Technology, Gdansk, Poland
[2]Friedrich-Alexander University of Erlangen-Nuremberg, Erlangen, Germany
[3]Institute of Physical Chemistry, Polish Academy of Sciences, Warsaw, Poland
[4]Catalysis Research Center, Hokkaido University, Sapporo, Japan

4:10 - 4:25(ST) **Predicting the Effectiveness of Photocatalytic Materials Using the Photocatalytic Active Radiation (PcAR) Concept and Radiative Transfer Modeling**

Dr. Robert E. Ryan[1], Ms. Mary Pagnutti[1], Dr. Lauren W. Underwood[2]
[1]Innovative Imaging and Research, Stennis Space Center, MS, USA
[2]Computer Sciences Corporation, Stennis Space Center, MS, USA

4:25 - 4:40(ST) **Development of Commercial Photocatalytic Reactors: Investigation of Phenol Degradation Intrinsic Kinetics Over Deposited Titanium Dioxide.**

Massimiliano Vezzoli, Dr Wayde N. Martens and Prof. John Bell
Faculty of Built Environment and Engineering, Queensland University of Technology, Brisbane Queensland, Australia

4:40 - 4:55(ST) **Kinetic Modeling of the Photocatalytic Oxidation of Sodium Dodecylbenzenesulphonate**

Montserrat Sánchez, María J. Rivero and Inmaculada Ortiz
Departamento de Ingeniería Química y Química Inorgánica, ETSIIT, Universidad de Cantabria, Santander, España

4:55 – 5:10(ST) ***In-situ* ATR-FTIR Study of Photocatalytical Reactions at the Liquid/Solid Interface**

Dangguo Gong [1], Vishnu Priya Subramaniam [1], James Highfield [2*], Yuxin Tang [1], Yuekun Lai [1], Pushkar Dilip Kanhere [1], Yuhua Cheng [1], Zhong Chen [1*]

[1]School of Materials Science and Engineering, Nanyang Technological University, Singapore
[2]Applied Catalysis Technology, Institute of Chemical & Engineering Sciences, Singapore

Wednesday, November 17, 2010

Session IX

Photocatalysis for Organic Synthesis

Chair: Jean-Marie Herrmann

8:30 - 8:55(IL) **Photodegradation of Dyes on TiO_2 under Visible Irradiation and Its Application to Selective Oxidation of Alcohols**
Jincai Zhao*, Wanhong Ma, Chuncheng Chen, Hongwei Ji
Beijing National Laboratory for Molecular Sciences, Institute of Chemistry, Chinese Academy of Sciences Beijing, China

8:55 - 9:20(IL) **Significance of TiO_2 Photocatalysis for Organic Synthesis**
Davide Ravelli, Daniele Dondi, Maurizio Fagnoni and Angelo Albini
Dept. Organic Chemistry, University of Pavia, Pavia, Italy

9:20 - 9:45(IL) **Some Aspects of Photocatalysis at Doped and Surface Modified TiO_2**
R. Amadelli[1*], L. Samiolo[1], D. Gazzoli[2]
[1]ISOF-CNR, c/o Department of Chemistry, University of Ferrara, Ferrara, Italy
[2]Department of Chemistry, University of Rome "La Sapienza", Rome, Italy

9:45 - 10:10(IL) **Selective Oxidation of Alcohols over Semiconductor Photocatalysts**
Tetsuya Shishido
Department of Molecular Engineering, Graduate School of Engineering, Kyoto University, Kyoto, Japan

10:10 - 10:30 **Coffee Break**

10:30 - 10:55(IL) **Selectivity in TiO_2 Photocatalytic Oxidations**
Haruthai Thanasawasdi[1], David S. Ross[2] and Theodore Mill[1]
[1]SRI, Menlo Park, CA; [2]US Geol. Survey, Menlo Park, CA

Session X

Doped Photocatalysts for Visible Light Activity

Chair: Krishnan Rajeshwar

10:55 - 11:20(IL) **Performance of Doped TiO_2 Photocatalysts in Visible Light**

Jan Hupka and Adriana Zaleska
Department of Chemical Technology, Faculty of Chemistry, Gdansk University of Technology, Gdansk, Poland

11:20 - 11:45(IL) **N-TiO_2: Chemical Synthesis and Photocatalysis**

Matias Factorovich[1], Lucas Guz[2], Roberto Candal[1,2]
[1]INQUIMAE-CONICET. Ciudad Universitaria, Pabellón II, Buenos Aires, Argentina
[2]CEA, ECyT-3iA, Universidad Nacional de San Martín, Campus Miguelete, Prov. Buenos Aires, Argentina

11:45 - 12:10(IL) **On the Origin of Visible-Light Activity of the Co-Doped TiO_2 Photocatalysis**

Yelda Yalçin Gurkan, Zekiye Çinar
Yıldız Technical University, Department of Chemistry, Istanbul – TURKEY

12:10 - 1:30 **Lunch Break Break**

1:30 - 1:55(IL) **Band Gap Engineering in TiO_2 by Bulk and Surface Doping with P-Block Elements: A Reliable Perspective for Visible Light Absorption**

Elio Giamello
Dipartimento di Chimica IFM and NIS, Center of Excellence, Università di Torino, Torino, Italy

Session XI

Photocatalysis: Catalyst Synthesis (2)

Chair: Bunsho Ohtani

1:55 - 2:20(IL) **Synthesis and Performance of Highly Active Mixed-Phase NF-TiO_2 Composite Photocatalysts for the Degradation of Microcystin-LR**

Miguel Pelaez[1], Polycarpos Falaras[2], Vlassis Likodimos[2], Athanassios G. Kontos[2], Armah. A. de la Cruz[3] and Dionysios D. Dionysiou[1*]
[1]Department of Civil and Environmental Engineering, University of Cincinnati, Cincinnati, Ohio, USA
[2]Institute of Physical Chemistry, NCSR Demokritos, Aghia Paraskevi, Attiki, Greece
[3] Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH, USA

2:20 - 2:45(IL) **Preparation and Characteristic Reaction of Au Nanoparticle-Loaded Titanium Oxide Photocatalyst**

Tatsuhiko Ihara*, Yuka Yamamoto
Department of Biotechnology and Chemistry, Kinki University, Higashi-Hiroshima, Japan

2:45 - 3:10(IL) **Is Charge Separation Always Productive?**

Yaron Paz
Department of Chemical Engineering, Technion-Israel Institute of Technology, Haifa, Israel

3:10 - 3:30 **Coffee Break**

3:10 - 3:35(IL) **Synthesis of Semiconductor Oxide Nanostructures and Their Application in Aqueous Pollutant Treatment**

Zhong Chen
School of Materials Science and Engineering, Nanyang Technological University, Singapore

Session XII

Photocatalysis: Self -cleaning Surfaces and Air Treatment

Chair: Christa Fittschen

3:35 - 4:00(IL) **Development of a Test Method to Assess Self Cleaning Performances of Glasses, Based on Outdoor Field Tests – Proposal to CEN Standardization**

Anne Durandeau, Rosiana Aguiar, Nicolas Chemin
Saint-Gobain Recherche, Aubervilliers - France

4:00 - 4:25(IL) **Kinetics of Photocatalyzed Dye Removal in Air-TiO_2 Systems: Reconsideration**

David Ollis
North Carolina State University, Raleigh NC, USA

4:25 - 4:50(IL) **Effect of Glass Substrate and Deposition Technique on Photoinduced Properties of Sol Gel TiO_2 Thin Films**

Josef Krysa[a], Stepan Kment[a] and Andrew Mills[b]
[a] Department of Inorganic Technology, Institute of Chemical Technology Prague, Czech Republic
[b] University of Strathclyde, The Department of Pure and Applied Chemistry, Glasgow, Scotland

4:50 - 5:05(ST) **Photocatalytic Oxidation of VOCs in Indoor Air (Ppb Levels): Kinetic and By-Product Investigation - Influence of VOC Mixture**

O. Debono[1,2,3], F. Thevenet[1,2], V. Hequet[3], C. Raillard[3], L. Lecoq[4], N. Locoge[1,2]
[1]Université Lille Nord-de-France, Lille, France
[2]Dpt Chimie-Environnement, Ecole des Mines de Douai, Douai, France
[3]Dpt Systèmes Energétiques et Environnement, UMR CNRS 6144 GEPEA, Ecole des Mines de Nantes, Nantes, France

5:05 - 5:20(ST) **Normacat Project: Normalized Closed Chamber Tests for COV Treatment in Indoor Air**

B. Kartheuser[1], S. Lacombe[2], T. Pigot[2], N. Costarramone[2]
[1] CERTECH asbl, Seneffe, Belgium
[2] UMR CNRS 5254, IPREM, Université de Pau et Pays de l'Adour, Hélioparc, Pau cedex, France

5:20 - 5:35(ST) **Photocatalytic Cleaning of Oil Contaminated Paved Areas and Surface Water Cleanup**

Dr. Peter J. Gross, Juergen Bender
KRONOS INTERNATIONAL, Inc., Application Technology Center, Leverkusen, Germany

5:35 - 5:50(ST) **Influence of Paint Components on P25 Photoactivity towards NO Abatement**

C. Águia[1], J. Ângelo[1,2], L. M. Madeira[1], A. Mendes[1*]
[1]LEPAE – Laboratory for Process, Environmental and Energy Engineering Chemical Engineering Department, Faculty of Engineering at Porto University, Porto, Portugal
[2]ARCP – Associação Rede Competência em Polímeros, Faculty of Engineering at Porto University, Porto, Portugal

6:00 – 7:30 **Poster Session/ Reception**

7:30 - 9:30 **Banquet Dinner**

Thursday, November 18, 2010

Session XIII

Photocatalysis: Fundamentals

Chair: David Ollis

8:30 - 8:55(IL) **Recall of Fundamentals for True Photocatalytic Reactions**

Jean-Marie Herrmann
Institute of Researches on Catalysis and Environment (UMR CNRS 5256), Université Lyon-1, Villeurbanne Cedex, France

8:55 - 9:20(IL) **Photolytic Efficiencies of Different Immobilized TiO_2 Nano-Particles**

Joseph Rabani
The Hebrew University of Jerusalem, Jerusalem, Israel

9:20 - 9:45(IL) **Utilizing Novel Nanstructures for Efficient Photocatalysis**

Alexander Orlov
Department of Materials Science and Engineering, State University of New York, Stony Brook, Stony Brook, NY, USA

9:45 – 10:00(ST) **Influence of Temperature, Ion Source Parameters, and Thickness on the Structural and Optical Properties of Photocatalytical TiO_2 Films Prepared by Ion Assisted Deposition**

R. Boughaled, H. Ehlers, D. Ristau
Laser Zentrum Hannover, Hannover, Germany

10:00 - 10:15(ST) **Identification and Photocatalytic Treatment of Malodorous Compounds Produced in a Wastewater Treatment Plant in Madrid, Spain**

Ronan F. Tessinari[1], Silvia Suárez[2], Raquel Portela[2], M. D. Hernandez-Alonso[2], Benigno Sánchez[2], Maria C. Canela[1]*
[1] UENF-CCT-Laboratório de Ciências Químicas, Campos dos Goytacazes, Brazil
[2] CIEMAT-PSA-Environmental Applications of Solar Radiation, Madrid, Spain

10:15 - 10:30 **Coffee Break**

10:30 - 10:45(ST) **Superior Performance of Inorganic Photocatalytic Silicate/Silicone Free Paint Coating Composition**

Jan Prochazka, Jill Kamler
Advanced Materials- JTJ, Inc. K. Zehrovice, Czech Republic
Healthy Environments, Inc. Reno, Nevada

Session XIV

Photocatalysis in Air: Fundamentals

Chair: Stephen O. Hay

10:30 - 10:55(IL) **Direct Detection of HO_2 Radicals in the Vicinity of Photocatalytic Surfaces Using cw-CRDS**

Christa Fittschen
Physico-Chimie des Processus de Combustion et de l'Atmosphère (PC2A), CNRS UMR 8522, Université des Sciences et Technologies de Lille,Villeneuve d'Ascq Cedex, France

10:55 - 11:20(IL) **Control of Reaction Sites on TiO_2 Nanoparticles by Exposing Crystal Surfaces**

Teruhisa Ohno and Naoya Murakami
Department of Applied Chemistry, Faculty of Engineering, Kyushu Institute of Technology, Tobata, Kitakyushu, Japan

11:20 - 11:45(IL) **Organic Molecules on TiO_2 Surfaces**

Shao-Chun Li [1] and Ulrike Diebold [1, 2]
[1]Department of Physics and Engineering Physics, Tulane University, New Orleans, LA, USA
[2]Institute of Applied Physics, Vienna University of Technology, Wiedner, Vienna, Austria

11:45 - 12:00(ST) **A Novel Approach to Improve TiO_2 Photo-Catalytic Performance in Indoor Air Purification**

Hong Chee, Seck and Randall, Cha
S.C. Advanced Envirotech Ltd., Edmonton, Alberta, Canada
S.C. HiTec Pte. Ltd., San Centre, Singapore

12:00 - 1:30 **Lunch Break Break**

Session XV

Photocatalysis: General

Chair: David Ollis

1:30 – 1:45 (ST) **Noble Metal Doped Porous Titania Photocatalysts: Impact of Mesoporous Order**

M. Wark[a], V. Yarovyi [a], I. Bannat [a], A.A. Ismail [b], D.W. Bahnemann [b]
[a]Institute for Physical Chemistry and Electrochemistry and Center of Solid State Chemistry and New Materials, Leibniz University Hannover, Germany,
[b]Institute for Technical Chemistry and Center of Solid State Chemistry and New Materials, Leibniz University Hannover, Germany

1:45 – 2:00 (ST) **Bismuth Based Oxides for Visible Light Photocatalysis**

T. Saison[1,2*], N.Chemin[1], O. Durupthy[2], J.P. Jolivet[2], V. Ruaux[3], L. Mariey[3], F. Maugé[3], C. Chanéac[2]

[1]Produits composites et revêtement de surfaces, Saint Gobain Recherche, UMR 125, Aubervilliers Cedex, France

[2]UPMC Univ Paris 06, CNRS, UMR 7574, Chimie de la Matière Condensée de Paris, Collège de France, Paris Cedex , France

[3]Laboratoire de Catalyse et Spectrochimie de Caen, EnsiCaen, Université de Caen, CNRS, 6 boulevard Maréchal Juin, 14050 Caen, France

2:00 – 2:15 (ST) **New Perspectives in Photocatalytic Set Up Design by Using Optical Fiber Containing Textiles**

E. Puzenat[a], P.-A. Bourgeaois[a], L. Peruchon[b], D. Malhomme[b], E. Deflin[b], C. Brochier[b], C. Guillard[a]

[a]Université Lyon1, CNRS, UMR 5256, IRCELYON Institut de recherches sur la catalyse et l'environnement de Lyon, Villeurbanne, France

[b]Brochier Technologies, Villeurbanne Cedex, France

2:15 – 2:30 (ST) **Degradation of Ethinylestradiol, Levonorgestrel and Ethanol by Heterogeneous Photocatalysis, Using *Drosophila Melanogaster* as Bioassay**

J. F. Moreno-López[a], R. Silva-Agudelo[a], F. Machuca-Martínez[a], H. Cárdenas Henao[b]

[a] GAOX Group, School of chemical Engineering. Universidad del Valle, Colombia

[b]Department of Biology, Universidad del Valle, Colombia

2:30 – 2:45 (ST) **Biologically Inspired Synthesis of Nanostructural Titanium Dioxide for Photocatalytic Applications**

Nichola M. Kinsinger, Ashley Wong, Ian Miller, Fabian Villalobos, Dongsheng Li, Luke Turalitsch and David Kisailus

Department of Chemical and Environmental Engineering, University of California-Riverside, Riverside, CA, USA

2:45 – 3:00(ST) **Photocatalytic Degradation of Reactive Commercial Dye from Textile Waste Water- Reaction Pathway and Identification of Intermediates**

Dhiraj Sud, Damanjit Singh and Priti Bansal

Department of Chemistry, Sant Longowal Institute of Engineering and Technology, Longowal, Sangrur, Punjab

3:00 **Adjourn**

POSTERS

(We will continue until September 15, 2010 accepting abstracts for poster presentations)

Water Treatment

[TiO2-P1] Solar Photodegradation Kinetics of Dichloroacetic Acid by Modified Langmuir-Hinshelwood and Six Flux Model in a Flat-Plane Reactor

Miguel Angel Mueses and Fiderman Machuca-Martínez
Advanced Oxidation Processes Research Group, GAOX, School of Chemical Engineering, Universidad del Valle, Cali – Colombia

[TiO2-P2] Removal of Pesticides with a TiO_2-based Solar Photocatalysis – Constructed Wetland Coupled System at Pilot Scale

José Colina-Márquez[a], Fiderman Machuca-Martínez[b], Wilson Salas[b]
[a]Universidad de Cartagena, Chemical Engineering Department. Cartagena, Colombia
[b]Universidad del Valle, Sede Meléndez, Chemical Engineering School, Cali, Colombia

[TiO2-P3] Effect of Reactor Size on the TiO_2-based photodegradation of Dichloroacetic Acid with Solar CPCs

Miguel A. Mueses[a], Augusto Arce-Sarria[a], José Colina-Márquez[b] and Fiderman Machuca-Martínez[a]*
[a]Group of Advanced Oxidation Process - GAOX, School of Chemical Engineering, Universidad del Valle, Cali-Colombia
[b]Department of Chemical Engineering, Universidad de Cartagena, Cartagena-Colombia

[TiO2-P4] Effective Radiation Field Model (ERFM) for Photocatalytic Reactors

Miguel A. Mueses and Fiderman Machuca-Martínez*
Grupo GAOX, Escuela de Ingeniería Química, Universidad del Valle, Cali – Colombia

[TiO2-P5] Effects of Photocatalysis When Using Titanium Dioxide in Healthy and Carcinogenic Skin Cells

Montes de Oca Reyes Lina María and Camargo Amado Rubén Jesús
Escuela de Ingenieria Química- Universidad del valle, Cali – Colombia

[TiO2-P6] Photocatalytic Transformation of Agricultural Wastewater with Residues of Pesticides

Luz Edith Barba[1], Dorance Becerra[2], Viviana Angulo[1], Liliana Salazar[1]
[1]Escuela de Ingeniería de Recursos Naturales y del Ambiente, Universidad del Valle, Cali –Colombia
[2]Escuela de Ingeniería y Administración, Universidad Nacional de Colombia, Palmira – Colombia

[TiO2-P7] Influence of the Morphology of $Nb_2O_5.3H_2O$, TiO_2 SnO_2 in Photocatalytic Removal of Cyanide

Aida Liliana Barbosa López, Isel Castro Sierra, Raúl Martinez Aparicio-S
Universidad of Cartagena, Campus de Zaragocilla /Laboratory of research of Catalysis and new materials (LICATUC), Science Faculty, Chemistry Program, Cartagena, Colombia

[TiO2-P8] Photocatalytic Degradation of Cyanides Present in Wastewater from the Mining Industry Using High Surface Area $Nb_2O_5.3H_2O$ as Catalysts

Aida Liliana Barbosa López, Isel Castro Sierra, Raúl Martínez Aparicio-S
Universidad of Cartagena, Campus de Zaragocilla /Laboratory of Research of Catalysis and New materials (LICATUC), Science Faculty, Chemistry Program, Cartagena, Colombia

[TiO2-P9] Kinetics and Mechanistic Investigations of the Reactions of Stored Electrons in TiO_2 Nanoparticles: Stopped Flow Studies

Hanan H. Mohamed, Ralf Dillert and Detlef W. Bahnemann
Institut für Technische Chemie, Gottfried Wilhelm Leibniz Universität Hannover, Hannover, Germany

[TiO2-P10] Stability and Visible Light Active Properties of an S-Doped TiO_2-Fe^{3+} Photocatalyst

Víctor M. Menéndez-Flores[§‡], Teruhisa Ohno[‡], Detlef W. Bahnemann[§]
[§]Institut für Technische Chemie, Leibniz Universität Hannover, Hannover Germany
[‡]Department of Applied Chemistry, Faculty of Engineering, Kyushu Institute of Technology, Tobata, Kitakyushu, Japan

[TiO2-P11] Synthesis of Sulfur doped TiO_2 by Sol-Gel Method for Drinking Water Treatment under Visible Light

Changseok Han[1], Miguel Pelaez[1], Vlassis Likodimos[2], Athanassios G. Kontos[2], Polycarpos Falaras[2] and Dionysios D. Dionysiou[1*]
[1]Department of Civil and Environmental Engineering, University of Cincinnati, Cincinnati, Ohio, USA
[2]Institute of Physical Chemistry, NCSR Demokritos, Aghia Paraskevi, Attiki, Greece

[TiO2-P12] Coupled TiO_2-Photocatalysis-Biological Treatment for the Elimination of Benzalkonium Chloride in Water

Elsa L. Loveira[1], Alejandro Senn[2,3], Gustavo Curutchet[1,3], Roberto Candal[1,3], Marta Litter[1,2,3]
[1]CEA, ECyT-3iA, Universidad Nacional de San Martín, Campus Miguelete, Prov. de Buenos Aires, Argentina
[2]Comisión Nacional de Energía Atómica, San Martín, Prov. de Buenos Aires, Argentina
[3]CONICET, Rivadavia 1917, Ciudad Autónoma de Buenos Aires, Argentina

[TiO2-P13] Photocatalytic Degradation of Aqueous Caffeine by TiO_2/MWCNT: Combined Effect of Materials Nature

Rita R. N. Marques, Ricardo A. Segundo, Pedro Tavares, Pedro Carrapiço, Joaquim L. Faria, Adrián M. T. Silva*
Laboratório de Catálise e Materiais (LCM), Laboratório Associado LSRE/LCM, Departamento de Engenharia Química, Faculdade de Engenharia, Universidade do Porto, Porto, Portugal

[TiO2-P14] Photocatalytic Inactivation of *Escherichia Coliform* with LbL Fabricated Immobilized TiO_2 Thin Films

Sharad Sontakke, Jayant Modak, Giridhar Madras
Department of Chemical Engineering, Indian Institute of Science, Bangalore, India

[TiO2-P15] Photocatalytic Degradation of Bisphenol A by C-N Codoped TiO_2 Using a Visible-Light Irradiated LED Photoreactor

Xiaoping Wang, Teik-Thye Lim, Bifen Gao
School of Civil Environmental Engineering, Nanyang Technological University, Singapore

[TiO2-P16] Disinfection Ability of Nitrogen Modified TiO_2 Obtained in a Pilot Scale Installation

Agata Markowska-Szczupak, Magdalena Janus, Antoni W. Morawski
West Pomeranian University of Technology, Institute of Chemical and Environment Engineering, Szczecin, Poland

[TiO2-P17] Treatment of Plasmid DNA with Ozone, Chlorine and TiO_2 Mediated Photocatalytic Oxidation: Effect of Oxidants on Plasmid DNA Structure and on its Efficiency to Transform Competent Cells

Nalan Bilgin Oncu and Isil Akmehmet Balcioglu
Bogazici University Institute of Environmental Sciences Bebek, Istanbul, Turkey

Air Treatment

[TiO2-P18] Effect of Structure Parameters of Mesoporous TiO_2 -Anatase Films on the Photocatalytic Oxidation of Methyl Ethyl Ketone (MEK)

N. Arconada[a], Y. Castro[a], A. Durán[a], V. Héquet[b]
[a] Instituto de Cerámica y Vidrio (CSIC), Campus de Cantoblanco, Madrid
[b] Ecole des Mines de Nantes (GEPEA,UMR,CNRS) Nantes Cedex 3, France

[TiO2-P19] Formaldehyde Degradation by TiO_2 Supported on Polymeric Matrices

Monique S. Curcio, Michel Picanço, Luís C. Passoni, Walter R. Waldman[1], Maria Cristina Canela[1]
UENF-CCT-Laboratório de Ciências Químicas, Campos dos Goytacazes, Brazil

[TiO2-P20] Pilot-Scale Photocatalytic Air Cleaner for Indoor Air Purification

Ana Luisa Loo Zazueta[1], Hugo Destaillats[2,3], Gianluca Li Puma[1]
[1]Photocatalysis & Photoreaction Engineering, Department of Chemical Engineering, Loughborough University, Loughborough, United Kingdom
[2]Indoor Environment Department, Lawrence Berkeley National Laboratory, Berkeley, California, USA
[3]School of Sustainable Engineering and the Built Environment, Arizona State University, Tempe, Arizona, USA

[TiO2-P21] Environmental Photocatalysis for Air and Water Purification and Self-Cleaning Materials

Jean-Marie Herrmann*, Eric Puzenat and Chantal Guillard
Institute of Researches on Catalysis and Environment IRCELYON, CNRS-Université de Lyon, Villeurbanne cedex, France

[TiO2-P22] Gas Phase Photocatalytic Activity of Various Particulate TiO_2 Layers

Tomas Floris, Martin Zlámal, Josef Krysa
Department of Inorganic Technology, Institute of Chemical Technology Prague, Czech Republic

[TiO2- P23] Environmental Photocatalysis for Air and Water Purification and Self-Cleaning Materials

Jean-Marie Herrmann*, Eric Puzenat and Chantal Guillard
Institute of Researches on Catalysis and Environment of Lyon - IRCELYON, CNRS-Université Lyon-1, 2 Av. A. Einstein, 69626 Villeurbanne cedex, France

Synthesis of Photocatalysts

[TiO2-P24] Photocatalytic and Photoelectrochemical Studies on Carbon Nanotubes - Titanium Dioxide Nanocomposites (CNTs/TiO_2) and the Effect of Carbon Content and TiO_2 Layer Thickness

Ziyan Li[1], George Zheng Chen[1], Robert Mokaya[2], Gianluca Li Puma[3]
[1]Department of Chemical and Environmental Engineering, University of Nottingham, Nottingham, United Kingdom
[2]School of Chemistry, University of Nottingham, Nottingham, United Kingdom
[3]Photocatalysis & Photoreaction Engineering, Department of Chemical Engineering, Loughborough University, Loughborough, United Kingdom

[TiO2-P25] Stability and Visible Light Active Properties of an S-Doped TiO_2-Fe^{3+} Photocatalyst

Víctor M. Menéndez-Flores[§‡], Teruhisa Ohno[‡], Detlef W. Bahnemann[§]
[§]Institut für Technische Chemie, Leibniz Universität Hannover, Hannover Germany
[‡]Department of Applied Chemistry, Faculty of Engineering, Kyushu Institute of Technology, Japan

[TiO2-P26] Synthesis and Structural Characterization of Iron-Doped Titanium Dioxide Powders

J. H. Castillo-Ledezma[1], Francisco J. Rodríguez[2], Aurelio López-Malo Vigil[3], Erick R. Bandala[1]*
[1]Department of Civil and Environmental Engineering, Universidad de Las Américas, Puebla, Mexico
[2]Center for Research and Technological Development in Electrochemistry, Parque Tecnológico Querétaro, Sanfandila, Querétaro, México
[3]Department of Chemistry, Food and Rnvironmental Engineering, Universidad de Las Américas, Puebla, Mexico

[TiO2-P27] A Facile Method of Preparing Titania Based Binary Metal Oxide Nanocomposites: CNTs-CoO-TiO_2: Synthesis and Characterization

L.N. Dlamini [1], R.W. Krause[1]*, G.U. Kulkarni [2], S. H. Durbach[1]
[1] Department of Chemical Technology, University of Johannesburg, South Africa
[2] Chemistry and Physics of Materials Unit, Jawaharlal Nehru Centre for Advanced Scientific Research, Bangalore, India

[TiO2-P28] Photocatalytic Properties of TiO_2 Nanoclusters Deposited by Dense Plasma Focus: Morphology and Annealing Effect

G. Macharaga, R. S. Rawat, G. Roshan Deen, P. Lee, A. Tan, S. V. Springham
Natural Science and Science Education (NSSE), National Institute of Education, Nanyang Technological University, Singapore

[TiO2-P29] TiO_2 Thin Film Deposition and Anion Implantation for Visible Light Catalysis Using the Dense Plasma Focus

G. Macharaga[1], R. S. Rawat[1], G. Roshan Deen[1], P. Lee[1], A. Tan[1], S. V. Springham[1]
[1]Natural Science and Science Education (NSSE), National Institute of Education, Nanyang Technological University, Singapore

[TiO2-P30] Templated Photocatalytic Growth of Silver on TiO_2-B and other TiO_2 forms

Jan Prochazka, Ladislav Kavan, Marketa Zukalova, Otakar Frank, Jaromir Jirkovsky
J. Heyrovsky Institute of Physical Chemistry of the ASCR, v. v. i., Prague, Czech Republic

[TiO2-P31] Investigation on Plasmonic Photocatalysis of Ag/TiO_2 Catalysts Having Different Morphologies

Chih-Yi Chang, Chia-Nan Lin and Nae-Lih Wu*
Department of Chemical Engineering, National Taiwan University, Taipei, Taiwan

[TiO2-P32] Microwave-Assisted Synthesis of Visible-Light-Driven Nanocomposite Au/WO_3 for the Remediation of Water Hazards

M. Qamar and Z. H. Yamani
Center of Excellence in Nanotechnology, King Fahd University of Petroleum and Minerals, KFUPM, Dhahran, Saudi Arabia

[TiO2-P33] Production of Highly Efficient Photocatalytic Titanium Oxide Powder by Mechanical Ball Milling and Evaluation of Photocatalytic Properties

E. Corapci[1], B. Aysin[1], A. Ozturk[1*], J. Park[2]
[1]Middle East Technical University, Ankara, Turkey
[2]Atilim University, Ankara, Turkey

[TiO2-P34] Improving the Photocatalytic Activity of One-Dimensional TiO_2 Nanostructures for Air Treatment Applications

M. D. Hernández-Alonso, S. García-Rodríguez, S. Suárez, B. Sánchez and J. M. Coronado
CIEMAT-PSA, Environmental Applications of Solar Radiation, Madrid, Spain

Hydrogen Production

[TiO2-P35] Hydrogen Production Using Gas Phase Photocatalysis with Nanocrystalline TiO_2-WO_3 Composite Films

S. B. Sadale*[1], Kei Noda[1], Kei Kobayashi[2], and Kazumi Matsushige[1]

[1]Department of Electronic Science and Engineering, Kyoto University, Kyoto, JAPAN
[b]Office of Society-Academia Collaboration for Innovation, Kyoto University, Kyoto, JAPAN

[TiO2-P36] Investigation on Photoelectrochemical Properties of Metal Nanoparticle Deposited Visible Light-responsive TiO_2 Thin Film Photocatalysts

Afshin Ebrahimi, Masato Takeuchi, Masaya Matsuoka*, Masakazu Anpo*
Department of Applied Chemistry, Graduate School of Engineering, Osaka Prefecture University Osaka, Japan

Dye-Sensitized Solar Cells

[TiO2-P37] Efficiency Improvement of Dye-Sensitized Solar Cells Based on Electrodeposited TiO_2 Films by Low Temperature Post Treatment

M. Wark, K. Wessels, T. Oekermann
Institute for Physical Chemistry and Electrochemistry, Center of Solid State Chemistry and New Materials, Leibniz University Hannover, Germany

[TiO2-P38] Preparation of Screen Printing Titania Pastes for Dye - Sensitized Solar Cell

Do Thanh Sinh, Nguyen Thai Hoang, Nguyen Thi Phuong Thoa
University of Science, Vietnam National University-Hochiminh City, Vietnam

[TiO2-P39] High Efficiency Dye-sensitized Solar Cells with 3D Nano-electrodes

H. Huang, C. K. Lim, M. S. Tse and O. K. Tan*
Microelectronics Center, School of Electrical & Electronic Engineering, Nanyang Technological University, Singapore

[TiO2-P40] Enhancement in Photocurrent Density of DSSCs through Improved Deagglomeration of Nanocrystalline TiO_2

Ajay Kumar Jena, Pragyensh Kumar and Parag Bhargava
Department of Metallurgical Engineering and Materials Science, Indian Institute of Technology Bombay, Mumbai, India