

7th International Conference on
**CATALYSIS AND CHEMICAL
ENGINEERING**

February 20-22, 2023

Las Vegas, NV

February 23-24, 2023 | Online



Venue:

Hampton Inn Tropicana
4975 S. Dean Martin Dr.
Las Vegas, Nevada, USA



Timezone:

Pacific Time



SILVER SPONSOR



EXHIBITORS



part of
VERDER
scientific



easy**XAFS**



micromeritics



catalysis@uniscigroup.org



+1-469-854-2280/81



<https://catalysis.unitedscientificgroup.org/>





analytical

Products for Photoredox Catalysis Applications

Para-dox® Aluminum Reaction Blocks

A successful approach to high-throughput reaction screening requires the best tools available. Our comprehensive line of Photoredox Catalysis Reaction Blocks were designed specifically for high-throughput screening (HTS) applications, and the SBS (SLAS/ANSI) format allows for use in any industry standard automation application.



Lumidox® II LED Arrays

U.S. Patent No. 11,458,447

Our patented LED arrays provide wavelength and power specific illumination to samples for photoredox catalysis applications.

- Up to 15 different color wavelengths are available
- 5 output power STAGES
- Available in two Surface Mat styles
- Three options for Base configurations

Para-dox® and Lumidox® are just some of the many products developed and manufactured by Analytical. We offer a full line of laboratory equipment including collection plates, MASS-Spec-grade vials, HPLC consumables, fluidic transfer solutions, column heaters and coolers, and laboratory safety products.

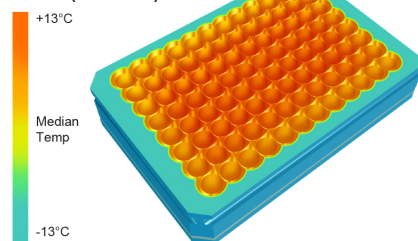


analytical

Temperature Controlled Reactor (TCR)

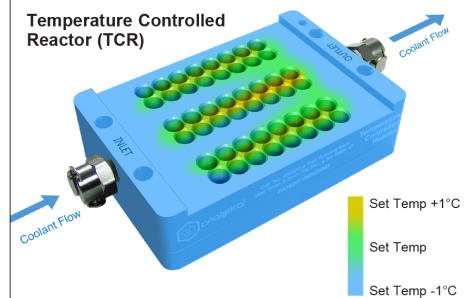
The TCR is a fluid-filled reactor that keeps temperature consistent throughout the block and around your samples. It greatly reduces excessive heat that can be caused by external sources, such as a Lumidox® II 48 LED array.

First generation Photoredox Reactor (uncooled)



Simulated heat maps of a standard 96-well Photoredox Reactor Block vs. a Temperature Controlled Reactor (TCR), when used with a Lumidox®II LED array at full power.

Temperature Controlled Reactor (TCR)



973-616-0700
analytical-sales.com



easyXAFS

The Global Leader in Lab XAFS.

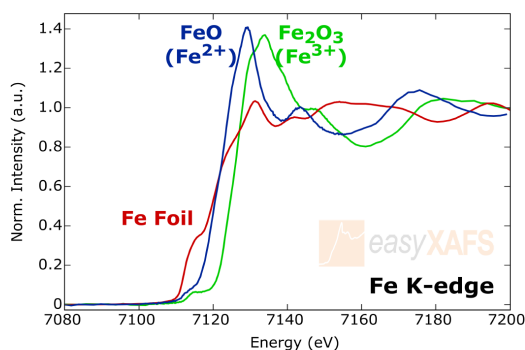


In-House Synchrotron-Quality XAFS and XES for Catalysis Development, Quality Control, and Operando Study

XAFS and XES are central analytical tools in catalysis science. easyXAFS spectrometers are the globally proven solution to in-house analytical XAFS and XES in support of academic and industrial catalysis communities.

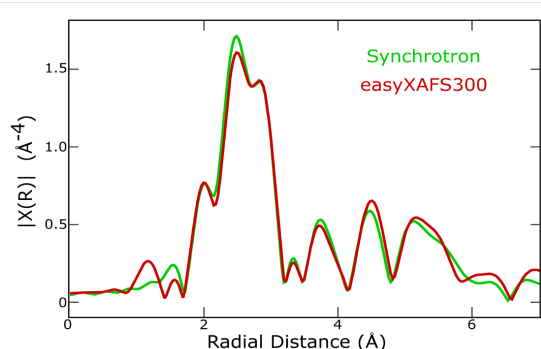
Daily analytical capabilities for oxidation state and phase analysis of nanomaterials.

Ask us about our operando capabilities!



Transition metal XANES is fast, simple, and has synchrotron-grade energy resolution.

EXAFS of Supported Catalysts



Comparison of synchrotron and easyXAFS300 EXAFS for Pt.

Our spectrometers provide the most reliable, bulk sensitive measure of the isolation of the metal species.

Does your single-atom catalyst actually have isolated atoms at a bulk level?

For more info and to see our example data from our systems please visit www.easyXAFS.com

© easyXAFS, 2023



SURFACE AREA



POROSITY



DENSITY



ACTIVITY



POWDER FLOW



Micromeritics Instrument Corporation

Micromeritics is the world's leading supplier of high-performance systems to characterize particles, powders and porous materials with a focus on physical properties, chemical activity, and flow properties. Our industry-leading technology portfolio includes equipment for: pycnometry, adsorption, dynamic chemisorption, porosimetry, powder rheology, catalyst reactivity and breakthrough studies, and particle size analysis.

The company has R&D and manufacturing sites in the USA, UK, and Spain, and direct sales and service operations throughout the Americas, Europe, and Asia. Micromeritics systems are the instruments-of-choice in more than **10,000** laboratories of the world's most innovative companies, prestigious government, and academic institutions. Our world-class scientists and responsive support teams enable customer success by applying Micromeritics technology to the most demanding applications. Contract testing is offered via the Particle Testing Authority.

PRODUCT PAGE



PARTICLE
TESTING
SERVICES



Exhibitor

MICROTRAC
MRB
PARTICLE CHARACTERIZATION



BELSORP
MAX X

SURFACE AREA AND PORE SIZE DISTRIBUTION ANALYZER

HIGH-END ADSORPTION.
SMALLEST FOOTPRINT.
UNRIVALED PERFORMANCE.

part of **VERDER**
scientific

BELSORP MAX X

HIGHLY ACCURATE
GAS & VAPOR ADSORPTION

The **BELSORP MAX X** is a versatile instrument that measures specific surface area, pore size distribution, vapor adsorption, and chemisorption. The instrument allows for comprehensive surface characterization, such as BET surface area and micropore analysis, by measuring the adsorption isotherms from extremely low pressures, organic vapor sorption or hydrophilicity/hydrophobicity characterization through water vapor adsorption.

These capabilities are accomplished by the proprietary technical advantages of heated manifold blocks (50°C, opt. 80 °C) for a constant ambient temperature, heated air bath, and electropolished manifold lines to avoid surface wetting and corrosion. Furthermore, the BELSORP MAX X features pneumatic valves to minimize leakages or outgassing when working with high vacuum.

The BELSORP MAX X not only supports a wide range of gas and vapor adsorbates, but various measurement conditions as well. In addition, the most suitable conditions for each measurement are automatically set based on the user's adsorption isotherm data through Gas & Vapor Dosing Optimization (GDO).

BELSORP MAX X Features

- ▶ Specific surface area range:
 - | 0.01 m²/g or more (N₂)
 - | 0.0005 m²/g or more (Kr)
- ▶ Pore size distribution range:
 - | 0.35 to 500 nm
- ▶ Highly accurate vapor adsorption measurement under strict temperature control
- ▶ Advanced GCMC / NLDFT method offers higher resolution & more precise PSD analyses
- ▶ IoT: Measurement status & results are sent remotely via e-mail notification system

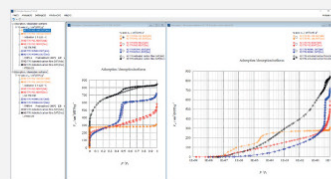
POWERFUL & EFFICIENT SOFTWARE

The versatility of BELSORP equipment is truly world leading. The numerous features and capabilities are complemented by BELCONTROL the intuitive and user-friendly operation software. It guides the user step-by-step through the analysis process. This includes the setup of analysis conditions, executing the measurements, when to fill and setup the liquid nitrogen or other bath, when to replace the gas cylinder, the degassing steps, and much more. The software is designed to make the Instrument accessible and operable to everyone, including inexperienced users.

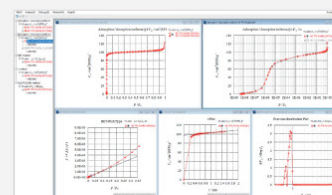
For inexperienced users or for measurements of unknown samples, BELCONTROL only requires basic sample information (name, mass, etc.), pre-treatment conditions (if not performed externally) and the measurement range. Detailed control of the configuration and measurement settings is possible to optimize the measurement conditions (e.g. dosing settings, equilibrium criteria, leak test option, etc.). This allows the user to fully customize the sample analysis to his needs.



- ▶ Analysis data and results can be saved by Drag & Drop (MS Excel format)
- ▶ Easy change of chart overwriting, X-Y axis scaling, unit conversion, point markers and color
- ▶ Analysis results window can be saved for further analysis after a computer restart
- ▶ Equipped with a routine analysis setting function, useful for performing the same analysis every time
- ▶ Customized data can be registered as standard reference Isotherms in pore profile analyses, t-plot and as
- ▶ Improved visibility for different analyses through individual color setting for custom data




▶ Isotherms starting from relative pressure of approx. 10^{-3}



▶ Analysis results: Isotherm, BET (according to ISO 9277), t-plot and pore size distribution by GCMC

TECHNICAL INFORMATION

Measurement principle	Volumetric method + AFSM™ (Advanced Free Space Measurement)	
Adsorption gas	N ₂ , Ar, Kr, CO ₂ , H ₂ , O ₂ , CH ₄ , NH ₃ , NO, CO, butane, and various other (non-)corrosive gases	
Adsorption vapor	H ₂ O, MeOH, EtOH, C ₆ H ₆ , CCl ₄ , hexane, and various other (non-)corrosive vapors	
Number of measurements (high accuracy mode)	Max. 4 ports simultaneously (3)	
Specific surface area	0.01 m ² /g~ (N ₂), 0.0005m ² /g~ (Kr) (depending on sample density)	
Pore size distribution (d)	0.35-500 nm	
Low pressure isotherm	P/P ₀ ≈ 10 ⁻⁴ ~ (N ₂ @ 77K, Ar @ 87K)	
Vapor adsorption	P/P ₀ ≈ ~ 0.95 @ 40°C	
133 kPa (1000 Torr)	6	
Pressure transducer	1.33 kPa (10 Torr)	4 (max.)
	0.0133 kPa (0.1 Torr)	3 (max.)
Thermostatic air oven	50°C	
Gas ports	3 ports * (optional: 6 or 12 ports max.)	
CE certificate		

MICROTRAC MAB PARTICLE CHARACTERIZATION

Microtrac Inc.
3230 N. Susquehanna Trail
York, PA 17406
USA

Tel.: +1 888 643 5880
marketing@microtrac.com
www.microtrac.com

Visit us and learn more
about the BELSORP MAX X:



MicrotracBEL Corp.
8-2-52 Nanko Higashi, Suminoe-ku
Osaka 559-0031
Japan

Tel.: +81 6244 34393
sales@microtrac-bel.com
www.microtrac.com

Microtrac Retsch GmbH
Retsch-Allee 1-5
42781 Haan
Deutschland

Tel.: +49 2104 2333 300
info@microtrac.com
www.microtrac.com

part of **VERDER**
scientific

Subject to technical changes and print errors.
Copyright © 2021 by Microtrac Retsch GmbH

MEETING JOINING LINKS (LIVE STREAMING ON ZOOM PLATFORM)

PACIFIC TIME

As the conference is hybrid, the virtual attendees can access the in-person presentations and queries can be asked through zoom chat box.

Meeting links shared will be for the complete meeting to join at any point of time.

February 20-24, 2023

Join Zoom Meeting

<https://us06web.zoom.us/j/87452834790?pwd=em1uLzB1cTVQTEFCYzN4VzhjRTY0UT09>

Meeting ID: 874 5283 4790

Passcode: 091181

For Exhibitors:

E1 | Analytical Sales and Services, Inc.

<https://us06web.zoom.us/j/87949739424?pwd=ZFEbjcxMWJsYTFhZXpVcGdPdFQ3dz09>

Meeting ID: 879 4973 9424

Passcode: 705888

E2 | Microtrac MRB

<https://us06web.zoom.us/j/82480560401?pwd=OEY1dXE2QUN6eEZ6NEpRN0hGbG5mQT09>

Meeting ID: 824 8056 0401

Passcode: 943468

E3 | EasyXAFS

<https://us06web.zoom.us/j/89615714406?pwd=VmhicXFaNDk3dFhHWEZ4TFhZOXNxQT09>

Meeting ID: 896 1571 4406

Passcode: 099907

E4 | Micromeritics

<https://us06web.zoom.us/j/81277619366?pwd=SHAwOXhuTjA2Mk12M09WaEcvQjFndz09>

Meeting ID: 812 7761 9366

Passcode: 266420

Wi-Fi Information

Wi-Fi network: Hilton honors

Code: lasin2018

DAY 1

**FEBRUARY
20, 2023**

IN-PERSON | SALON A

Join the meeting

<https://us06web.zoom.us/j/87452834790?pwd=em1uLzB1cTVQTEFCYzN4VzhjRTY0UT09>

Meeting ID: 874 5283 4790

Passcode: 091181

@ Salon A

07:30-07:50 Registrations and Badge Pickup

07:50-08:00 Opening Ceremony

Moderator: Mannar Ram Maurya, Indian Institute of Technology Roorkee, India

Moderator Presentation

08:00-08:30

Catalytic Potentials of Metal Complexes Supported on Chloromethylated Polystyrene Cross-Linked with Divinyl Benzene**Mannar Ram Maurya**, Indian Institute of Technology Roorkee, India

Prof. Mannar Ram Maurya is currently with the Department of Chemistry as a Professor of Inorganic Chemistry of Highest Academic grade. He has served as Chair of Department of Chemistry and Dean of Faculty Affairs of Indian Institute of Technology Roorkee, India. He received his Ph.D. from Kurukshetra University (NIT, Kurukshetra), Kurukshetra, 1987, M.Sc. from Bundelkhand University, Jhansi, 1981 and B.Sc. from Gorakhpur University, 1979. His current research interests are: structural and functional models of vanadium haloperoxidases; encapsulation of molybdenum and vanadium complexes in the cavity of zeolite-Y and immobilization on inorganic/organic polymers and their uses as recyclable and sustainable systems for catalytic oxidation of organic substrates and single pot multi component reactions. His group also try to identify the intermediate(s) to understand the mechanism involved in catalytic reactions. He has published more than 170 research articles and 10 review articles (citations >7,000, h index = 50). He has served as Guest Editor of the special issues of Topics in Catalysis (**Volume 61**, October 2018) and Catalysis Today (**Volume 358**, 1 December 2020, **Volumes 388-389**, 1 April 2022, **Volumes 397-399**, 1 August 2022) based on the 2nd to 5th International Conferences on Catalysis and Chemical Engineering organized by United Scientific Group.

Plenary Presentations

08:30-09:10

Model Systems for Heterogeneous Catalysts at the Atomic Scale: Can Surface Science Contribute?**Hans-Joachim Freund**, Fritz Haber Institute, Germany

Prof. Hans-Joachim Freund (born 1951) studied physics and chemistry at the University of Cologne and received his PhD in 1978 with the thesis "Experimental and theoretical contributions to understanding the electronic structure of transition metal adsorbates in comparison with transition metal compounds". He is member of several scientific societies; member of several advisory boards of scientific journals, has published more than 850 scientific papers with more than 55,540 citations and given more than 820 invited talks. He has held a number of named lectureships over the years. He is a founding member of the Scientific Council of the European Research Council. Hajo Freund has educated more than 150 PhD students and collaborated with more than 80 postdoctoral associates. Many former members of his group hold higher academic positions worldwide.

09:10-09:50

Surfaces as Ligands, Activators, and Catalytic Models for Polyolefin Construction and Deconstruction

Tobin J. Marks, Northwestern University, Evanston, IL



Prof. Tobin Marks is Ipatieff Professor of Catalysis and Materials Science and Engineering at Northwestern U. He holds a BS from the U. of Maryland and a PhD from MIT. Recognitions: U.S. National Medal of Science, ACS Priestley Medal, Spanish Asturias Prize, MRS Von Hippel Award, Dreyfus Prize in Chemical Sciences, NAS Award in Chemical Sciences, CAS President's International Distinguished Scientist Award, Israel Harvey Prize. Membership: U.S., European, German, Italian, and Indian Academies of Science, U.S. NAE and NAI, American Academy of Arts and Sciences; RSC, MRS, ACS, AIC Fellow. Research interests: unconventional catalysis, soft and hard matter electronic materials, and photovoltaics.

09:50-10:30

Grand Canonical Quantum Mechanics with Applications to Mechanisms and Rates for Electrocatalysis

William A. Goddard III, California Institute of Technology, Pasadena, CA



Prof. William Andrew Goddard III is currently Charles and Mary Ferkel Professor of Chemistry, Materials Science, Appl. Physics at California Institute of Technology (Caltech), Pasadena, CA. He is Director of Materials and Process Simulation Center (MSC). He has been a pioneer in developing methods for quantum mechanics (QM), force fields (FF), reactive dynamics (ReaxFF RD), electron dynamics (eFF), molecular dynamics (MD), and Monte Carlo (MC) predictions on chemical, catalytic, and biochemical materials system. He is a member of the International Academy of Quantum Molecular Science and the U.S. National Academy of Sciences.

10:30-10:50

Exhibitors Break

@ Foyer Area

10:50-11:30

Catalytic Coupling of Methane and CO₂ to Produce Higher Oxygenates

James J. Spivey, Louisiana State University, Baton Rouge, LA

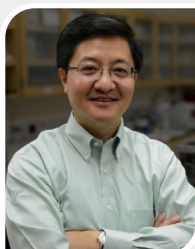


Prof. James J. Spivey is the J. M. Shivers and C.M. Eidt, Jr. Professor of Chemical Engineering at Louisiana State University. He is Editor-in-Chief of Catalysis Today, and Editor of the Royal Society of Chemistry's Catalysis book series. He has written/edited a total of 17 books over the last 15 years and has authored more than 100 publications. He has managed over \$30 million in sponsored projects over the past 20 years. He is past Director of the Center for Atomic-level Catalyst Design at LSU one of 46 multimillion-dollar DOE Energy Frontier Research Centers.

11:30-12:10

Thermally Stable Single Atom Catalysts

Yong Wang, Washington State University, Pullman, WA



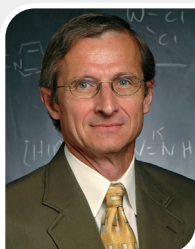
Prof. Yong Wang holds a joint appointment as a Laboratory Fellow and Associate Director of the Institute for Integrated Catalysis at Pacific Northwest National Laboratory (PNNL) and Regents Professor and Voiland Distinguished Professor in Chemical Engineering at Washington State University (WSU). He serves as the Editor-in-Chief of Applied Catalysis B and Executive Editor of the Chemical Engineering Journal. Wang's expertise and contributions to the field of catalysis have been recognized through numerous awards, including the 2021 ACS E.V. Murphree Award in Industrial and Engineering Chemistry and the 2019 AIChE Catalysis and Reaction Engineering Practice Award. He has 400 peer-reviewed articles and 284 issued patents, including 110 U.S. patents.

Nobel Presentation

12:10-12:55

How Olefin Metathesis Catalysts Form from Olefins, and More

Richard R. Schrock, Massachusetts Institute of Technology, Cambridge, MA



Prof. Richard Royce Schrock is an American chemist and Nobel laureate recognized for his contributions to the olefin metathesis reaction used in organic chemistry. Prof. Richard R. Schrock is F. G. Keyes Professor Emeritus at MIT and the Distinguished Professor and George K. Helmkamp Founder's Chair of Chemistry at the University of California, Riverside. Their research projects concern the organometallic chemistry of molybdenum and tungsten with respect to the synthesis of alkylidene complexes, mechanisms, and applications of olefin metathesis reactions to organic chemistry. In 2005, Schrock received the Nobel Prize in Chemistry, for his work in the area of olefin metathesis, an organic synthesis technique. In addition to the Nobel Prize, Schrock has won numerous awards.

12:55-13:00	Group Photo	@ Salon A
13:00-13:45	Lunch Break	@ Coral Room

Moderator: **Vassiliki-Alexandra Glezakou**, Oak Ridge National Laboratory, Oak Ridge, TN

13:45-14:15

New Insights on the Impact of Geometrical and Electronic Structure in Water Oxidation Catalysis

Craig L. Hill, Emory University, Atlanta, GA

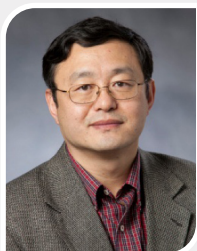


Prof. Craig L. Hill, the Goodrich White Professor at Emory University, has been studying catalysis, reaction mechanisms and materials science for years. Current research focuses on solar fuels, catalytic and multi-electron transfer processes, nanoscale materials and polyoxometalates. He has received three ACS awards, many others, is a Fellow of AAAS, the Victorian Institute of Chemical Sciences, the Academia Europaea, and the Royal Society of Chemistry. He has chaired NSF and NRC committees, several conferences, edited a journal and been a nominator for 1992-present Nobel Prizes in Chemistry. His H-index (GS) from Emory (95) + Berkeley (9) is 104.

14:15-14:45

Plasmonic Catalysis: Thermal Plus Nonthermal for Maximum Light Enhancement

Jie Liu, Duke University, Durham, NC



Prof. Liu's is a George Barth Geller Distinguished Professor of Chemistry, Faculty Network Member of The Energy Initiative, Nicholas Institute-Energy Initiative, Initiative. His research interests are focusing on the chemistry and material science of nanoscale materials. Specific topics in his current research program include: Self-assembly of nanostructures; Preparation and chemical functionalization of single walled carbon nanotubes; Developing carbon nanotube based chemical and biological sensors; SPM based fabrication and modification of functional nanostructures. Dr. Liu is a Fellow. American Physical Society. 2013, AAAS Fellows. American Association for the Advancement of Science.

14:45-15:15

A New Class of Adamantyl Based Bidentate Ferrocenyl Phosphine Ligands (Mphos) and Catalysts for the Synthesis of API Molecules via Csp²-Csp³ Cross Couplings

Thomas J. Colacot, MilliporeSigma, Milwaukee, WI



Dr Thomas J. Colacot joined MilliporeSigma (a business of Merck KGaA, Darmstadt, Germany) in 2018 as an R&D Fellow and Director of Global Technology Innovation, Life Science Business, in Milwaukee, WI, USA. He has extensive experience in developing new and innovative products and technology with a very strong track record of commercialisation globally. He is considered an industrial expert in organometallics and homogeneous catalysis geared for organic synthesis. He has about 120 peer-reviewed publications and over 60 patents internationally, plus three books with Royal Society of Chemistry, Wiley-VCH and Springer.

15:15-15:45

Thermostability, Tunability, and Tenacity of RNA as Motile and Dynamic Polymeric Materials in Nanotechnology and Nanomedicine

Peixuan Guo, The Ohio State University, Columbus, OH



Dr. Peixuan Guo, a pioneer of RNA nanotechnology, has held three endowed chair positions at three different prestigious universities, and currently is the Sylvan G. Frank Endowed Chair in Pharmaceuticals and Drug Delivery and the director of the Center for RNA Nanobiotechnology and Nanomedicine at The Ohio State University. He is the president of the International Society of RNA Nanotech and Nanomedicine. He received his Ph.D. from U Minnesota in 1987 and conducted his postdoc at NIH under Bernard Moss. He joined Purdue University in 1990, tenured in 1993 and became a full professor in 1997, honored as a Purdue Distinguished Faculty Scholar in 1998. He served as the Director of the NIH Nanomedicine Development Center (NDC) from 2006-2011, was the Director of NCI Cancer Nanotech Platform Partnership Program from 2012-2017. To date, Dr. Guo invented 70 patents (13 granted and 57 in Provisional and PCT). He is the 2021 Innovator of the year at The Ohio State University and was elected as an NAI Fellow in 2022.

15:45-16:15

New Nanostructures for Increased Selectivity and Stability in Catalysis

Francisco Zaera, University of California, Riverside, CA



Prof. Francisco Zaera is presently the Hartland H. Schmidt Founder's Chair and a Distinguished Professor in the Department of Chemistry at the University of California, Riverside, a Cooperative Faculty Member of the Chemical & Environmental Engineering Department, a Participating Faculty of the Materials Science and Engineering Program, the Director of the UCR Center for Catalysis, and the Assistant Director for XPS of the UCR Analytical Chemistry Instrumentation Facility. He was also until recently Senior Editor of The Journal of Physical Chemistry Letters. He has authored approximately 450 articles in scientific publications, which have been cited more than 25,000 times (according to Google Scholar), and has received several international awards, including the American Chemical Society George A. Olah, Arthur W. Adamson, and Inaugural Exceptional Achievements in Catalysis Awards, the North American Catalysis Society Paul H. Emmett Award, a Humboldt Research Award for Senior Scientists, and the 2021 UC Riverside Faculty Research Lecturer Award. He is a Fellow of the American Chemical Society, the American Vacuum Society, and the American Association for the Advancement of Science.

16:15-16:45

Comparative Studies of Fe and Co-Based Core-Shell Catalysts for Fischer-Tropsch Synthesis in SS Microreactors

Debasish Kuila, North Carolina A&T State University, Greensboro, NC



Debasish Kuila, previous Chair of chemistry, is the Research Director of NSF-CREST Bioenergy Center at North Carolina A&T State University. He is also the Director of DoE-BES project for Direct Air Capture of CO₂ and the DoE-EERE project for plastics upcycling. He is a faculty of the Applied Sciences & Technology and an adjunct professor of Wake Forest School of Medicine (WFIRM). Before joining NC A&T, he was an associate professor at Louisiana Tech and spent over 10 years at Hoechst Celanese and Great Lakes Chemical Corporations and Purdue University. His research interests span from materials/biomaterials, cell biology, drug toxicity screening to catalysis. He received ChemCon Distinguished Speaker Award at the 2019 International Conference on Energy & Environment: Challenges & Opportunities for Industries, Jaipur, India.

16:45-17:00

Break

@ Foyer Area

Oral Presentations

@ Salon A

Chair: **Vassiliki-Alexandra Glezakou**, Oak Ridge National Laboratory, Oak Ridge, TN

- 17:00-17:20 **Conformationally Locked Cis-1,2-Diaminocyclohexane-Based Chiral Ligands for Asymmetric Catalysis**
Carim van Beek, Kronos Bio, Inc., San Mateo, CA
- 17:20-17:40 **Reaching Saddle Points of Complex Potential Energy Surfaces using ARTn-DFT**
Hemeryck Anne, CNRS, France
- 17:40-18:00 **Adsorption and Advanced Oxidation of Pharmaceuticals and Their Toxic Byproduct Formation Potentials in Water by Graphene Oxide-Complex Metal Oxide Composites**
Wei-Hsiang Chen, National Sun Yat-sen University, Taiwan
- 18:00-18:20 **Global Optimization and Large-Scale Molecular Simulations for Catalysis Problems**
Vassiliki-Alexandra Glezakou, Oak Ridge National Laboratory, Oak Ridge, TN
- 18:20-18:40 **Direct CO₂ Hydrogenation to Aromatics Over Bifunctional ZnZrOx/ZSM-5: Effect of Zeolite Morphology to Product Distribution**
Mansoor Ali, Sungkyunkwan University, South Korea

18:40-19:40 Poster Presentations & Drinks

@ Foyer Area

- CCEP-01 **Different Hybrid Formation Aspect of Numerous Tiny-Sized Carbon Nanofibers in Carbon-Based Nonwoven Fabrics With or Without the Cyclic Process**
Sung-Hoon Kim, Silla University, South Korea
- CCEP-02 **Complete Photocatalytic Decomposition of Malodorous Gas using MOFs Composites as Visible-light Photocatalyst**
Suho Kim, Yonsei University, South Korea
- CCEP-03 **Multicomponent Antimonide as Efficient and Low-Cost Catalysts**
Terje Finstad, University of Oslo, Norway
- CCEP-04 **Effect of Mg-Incorporation in Sodium Promoted Magnetite during CO₂ Hydrogenation**
Jaehoon Kim, Sungkyunkwan University, South Korea
- CCEP-05 **Energy Harvesting from Water Potential Gradient using Porous Diatomite by Adding Carbon Black**
Ruey-Jen Yang, National Cheng Kung University, Taiwan
- CCEP-06 **Immobilization of Photocatalyst TiO₂ on Rubber Tiles and Photocatalytic Wind Tunnel Design for Treatment of Polluted Air: Croatian Case Study**
Marija Tomas, University of Zagreb, Croatia
- CCEP-07 **Methods of Immobilization of Titanium Dioxide on Rubber Tiles Made from Recycled Tyres for Passive Air Protection by Solar Photocatalysis**
Paula Benjak, University of Zagreb, Croatia
- CCEP-08 **Highly Efficient Catalysts for Industrial Flue Gas Desulfurization and Resource Utilization**
Yao Lu, Nanjing Tech University, China
- CCEP-09 **Cu-Doped Waste-Tire Carbon as Catalysts for the Oxidation of Ofloxacin**
Yuanbo Zhou, Nanjing Tech University, China

- CCEP-10 **Sludge-Ceramic-Base Monolithic Composites *via* Ball Milling and 3D Printed for Levofloxacin Removal**
Yifan Yan, Nanjing Tech University, China
- CCEP-11 **The Highly Dispersed Copper Species and Reactive Oxygen Species Synergistically Promoted VOCs Oxidation Over Cu-TiO₂ Catalyst**
Gao Ya, Nanjing Tech University, China
- CCEP-12 **Synthesis and Polymerization of Porphyrin Iron (III) Complexes**
Yalan Ning, Huston-Tillotson University, Austin, TX
- CCEP-13 **Preparation of CO₂-Responsive Polymeric Nanoparticles**
Yeong-Tarn Shieh, National University of Kaohsiung, Taiwan
- CCEP-14 **Technical Analysis of Biomass for Potential Application in Energetics**
Gursel Abbas, Hacettepe University, Turkey
- CCEP-15 **Obtaining Green Energy from Municipal Wastewater Treatment Plants with Environmentally Friendly and Energy-Efficient Technologies**
Gursel Abbas, Hacettepe University, Turkey
- CCEP-16 **Construction of Bi(hetero)aryls Mediated by DPZ Photoredox Catalyst**
Zuzana Burešová, University of Pardubice, Czech Republic
- CCEP-17 **Alkylidenes from Tungstacyclopentane Complexes *via* Photoinduced α -H Abstraction or Ring-Contraction**
René Riedel, University of California, Riverside, CA

DAY 2

FEBRUARY
21, 2023
IN-PERSON | SALON A

Join the meeting

<https://us06web.zoom.us/j/87452834790?pwd=em1uLzB1cTVQTEFCYzN4VzhjRTY0UT09>

Meeting ID: 874 5283 4790

Passcode: 091181

@ Salon A

Catalysis Concepts

@ Salon A

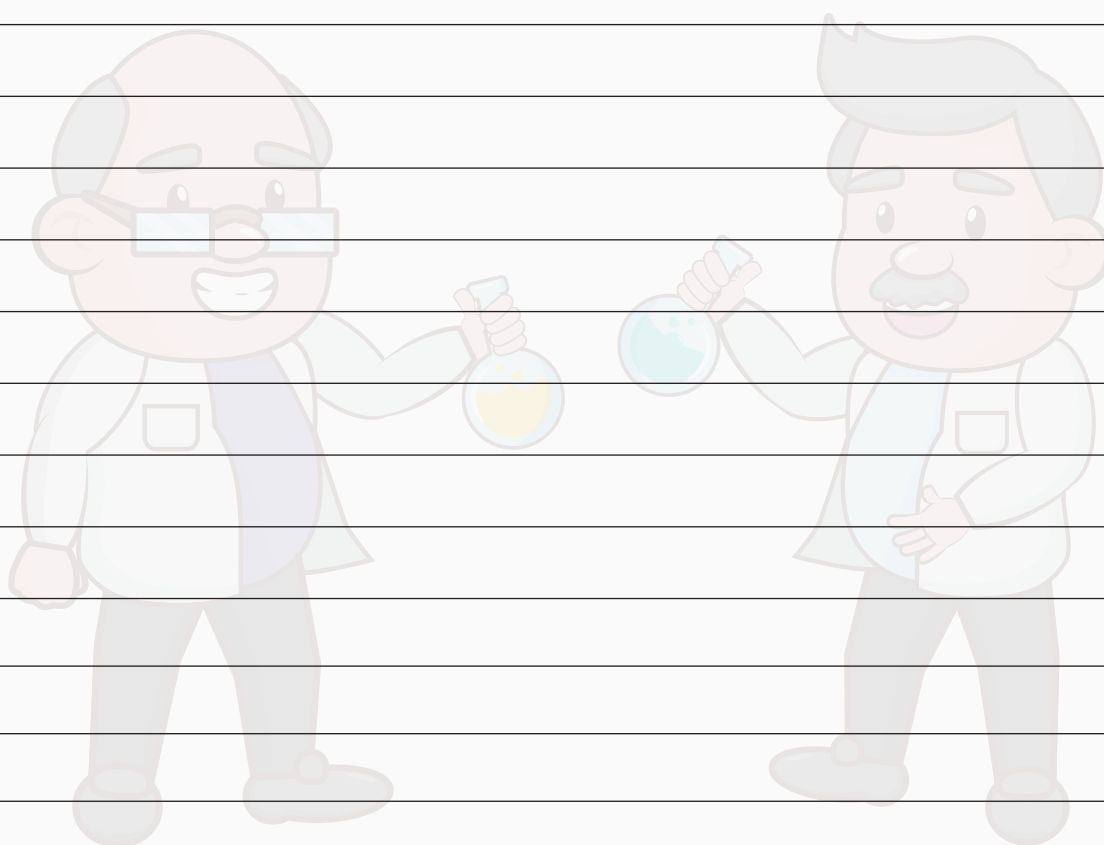
Chair: **Filip Bures**, University of Pardubice, Czech Republic

- 08:00-08:20 **Fabrication of ZnO Thin Films using Mist Chemical Vapor Deposition and Evaluation of its Photocatalytic Activity**
Chaoyang Li, Kochi University of Technology, Japan
- 08:20-08:40 **Physicochemical and (Photo)Electrochemical Characterization of M-Biox (M= Pd, Cu, Pd-Cu and X = Cl, Br, I) Composites Towards the CO₂ Reduction**
J. Manuel Mora-Hernandez, CONACYT - Universidad Autónoma de Nuevo León, México
- 08:40-09:00 **Ab-initio Studies of Elemental Processes in Water Splitting Technologies**
Tadashi Ogitsu, Lawrence Livermore National Laboratory, Livermore, CA
- 09:00-09:20 **Cathodization Based Tuning of TiO₂ Nanotube Arrays as (Photo)Electrocatalysts for Environmental and Energy Applications**
Kangwoo Cho, Pohang University of Science and Technology, South Korea
- 09:20-09:40 **Visible-light Mediated Organic Transformations Catalyzed by Dicyanopyrazine**
Filip Bures, University of Pardubice, Czech Republic
- 09:40-10:00 **Electrocatalytic Conversion of CO₂ in a Membrane Electrode Assembly Flow Electrolyzer**
Siyu Zhong, Karlsruhe Institute of Technology, Germany
- 10:00-10:20 **Porphyrin Small Molecules for Photocatalytic Hydrogen Evolution**
Xunjin Zhu, Hong Kong Baptist University, China
- 10:20-10:35 **Coffee Break** @ Foyer Area
- Chair: **Chantal Guillard**, IRCELYON, France
- 10:35-10:55 **A New Process for Water Treatment Associating Photocatalysis and Hydrothermal Processes**
Chantal Guillard, IRCELYON, France
- 10:55-11:15 **Oxo-Metal Catalyzed Transformations**
Alex John, Cal Poly Pomona, Pomona, CA
- 11:15-11:35 **Pilot Scale Solar Photocatalysis for Treatment of Polluted Air and Water: Croatian Case Study**
Ivana Grcic, University of Zagreb, Croatia
- 11:35-11:55 **S-Scheme Heterojunction Consisted by rGO/CeO₂/TiO₂ for Photothermo-Catalytic Oxidation of Elemental Mercury**
Ji-Ren Zheng, National Sun Yat-sen University, Taiwan
- 11:55-12:15 **Polymeric Nanoparticle Catalysts with Enzyme-like Catalytic Efficiency and Selectivity for Glycan and Ester Hydrolysis**
Yan Zhao, Iowa State University, Ames, IA

- 12:15-12:35 **Synthesis of a Novel Spinel Nanocomposite for the Photodegradation Application Under Visible light Illumination**
Kishore Chand, University of Genoa, Italy
- 12:35-12:55 **Synthesis of Multi-Metallic Nanocatalysts using a Dendrimer Reactor**
Kimihisa Yamamoto, Tokyo Institute of Technology, Japan
- 12:55-13:45 **Networking Lunch** @ Coral Room
- Chair: Elisabeth Egholm Jacobsen**, Norwegian University of Science and Technology, Norway
- 13:45-14:05 **Palladium Nanoparticles Encaged Within Amine-Functionalized Metal-Organic Frameworks: Extremely Efficient Multifunctional Catalysts for Base-Free Hydrogenation of Various Aldehydes and Ketones**
Md Abu Taher, European University of Bangladesh, Bangladesh
- 14:05-14:25 **Production of Composite PAN-Fibers Functionalized with Nanoscale NiO Catalysts For Enhanced Gas Sensing Properties**
Imash Aigerim, Institute of Combustion Problems, Kazakhstan
- 14:25-14:45 **Chemo-Enzymatic Synthesis of Pure Enantiomers of β -Antagonists Bisoprolol and Betaxolol**
Elisabeth Egholm Jacobsen, Norwegian University of Science and Technology, Norway
- 14:45-15:05 **Insights into the Catalytic Mechanism of Nitrile Hydratases**
Richard Holz, Colorado School of Mines, Golden, CO
- 15:05-15:25 **Reliable Modeling of Homogeneous 3d-Transition Metal Electrocatalysis**
Andreas Hansen, University of Bonn, Germany
- 15:25-15:45 **Pd@Pt Nanodendrites as Peroxidase Nanomimics for Ultra-Sensitive ELISA of Cytokines towards Personalized Immunotherapy**
Pengyu Chen, Auburn University, Auburn, AL
- 15:45-16:00 **Coffee Break** @ Foyer Area
- Chair: Richard Holz**, Colorado School of Mines, Golden, CO
- 16:00-16:20 **Biocatalysis by Immobilized Enzymes**
Ming Qun Xu, New England Biolabs, Inc., Ipswich, MA
- 16:20-16:40 **Characterization of Doped Carbon Thin Films Prepared by PVD Process as Electrode Material in Electrochemistry**
Frank Kaulfuss, Fraunhofer IWS, Germany
- 16:40-17:00 **CVD-Prepared Supported Fe-Oxide Nanoparticle Catalysts for Efficient Air Purification**
Byeong Jun Cha, Sungkyunkwan University, South Korea
- 17:00-17:20 **The Next Generation of Food Colorants Derived from Nature: Efficient Production of Pyranoanthocyanins**
Gonzalo Miyagusuku-Cruzado, The Ohio State University, Columbus, OH
- 17:20-17:40 **Distal Regulation in (Stereo)Selective Catalysis**
Anton Vidal, University of Barcelona, Spain

- 17:40-18:00 **Is this the Alternative to the Rate-Determining Step in Complex Heterogeneous Catalytic Reactions?**
Mirosław Szukiewicz, Rzeszow University of Technology, Poland
- 18:00-18:20 **Effect of Zr in Fe-Based Bimetallic Oxide for Long Chain Hydrocarbon Synthesis During CO₂ Hydrogenation**
Muhammad Kashif Khan, Sungkyunkwan University, South Korea
- 18:20-18:40 **Activity of Ni/TiO₂ Catalysts for Electrochemical Oxygen Reduction Reaction in Alkaline Media**
Izabela Rzeznicka, Shibaura Institute of Technology, Japan

Notes



DAY 3

FEBRUARY
22, 2023
IN-PERSON | SALON A

Join the meeting

<https://us06web.zoom.us/j/87452834790?pwd=em1uLzB1cTVQTEFCYzN4VzhjRTY0UT09>

Meeting ID: 874 5283 4790

Passcode: 091181

@ Salon A

Materials

@ Salon A

Chair: Matthew Krzystyniak, Rutherford Appleton Laboratory, UK08:00-08:20 **Highly Dispersed Metal Nanoparticle Catalysts Prepared by Atomic Layer Deposition**
Xinhua Liang, Washington University in St. Louis, St. Louis, MO08:20-08:40 **Silicon Electrochemistry for Sustainable Energy Solutions**
Eimutis Juzeliunas, Center for Physical Sciences and Technology, Lithuania08:40-09:00 **Effect of NaOH on Cellulose Pyrolysis**
Arjeta Kryeziu, University of Haute Alsace, France09:00-09:20 **Carbon Dioxide Reduction Catalyzed by Laser-Made Nanomaterials for Sustainable Technologies**
Astrid Mueller, University of Rochester, Rochester, NY09:20-09:40 **Vertical Propane Jet Fires: A Comparison Between Commercial (COMSOL) and Open Source (FDS) Software**
Adriana Palacios Rosas, Universidad de las Américas Puebla, Mexico09:40-10:00 **Understanding the Dynamic Evolution of Dispersed Transition Metal Catalysts During Electrocatalytic CO₂ Reduction: A Combined Computational XANES and Mechanistic Study**
Cong Liu, Argonne National Laboratory, Lemont, IL10:00-10:15 **Coffee Break** @ Foyer Area10:15-10:35 **Catalytic Biomaterials for Atrazine Degradation**
Karla Diviesti, Colorado School of Mines, Golden, CO10:35-10:55 **Interplay Between Local Structure and Nuclear Dynamics in Tungstic Acid: A Neutron Scattering Study**
Matthew Krzystyniak, Rutherford Appleton Laboratory, UK10:55-11:15 **X-ray Spectroscopy for Advanced Investigation of Energy Materials**
Chung-Li Dong, Tamkang University, Taiwan11:15-11:35 **Photoelectrochemical Advanced Oxidation Process for Water Treatment**
Hyoungh-il Kim, Yonsei University, South Korea

Energy

@ Salon A

Chair: Yirui Zhang, Massachusetts Institute of Technology, Cambridge, MA11:35-11:55 **Precious Metal Catalysts for the Conversion of Sustainable Feedstocks**
Chiranjit Sapre, Heraeus Precious Metals, Santa Fe Springs, CA11:55-12:15 **Tuning Electrochemical Reaction Kinetics Through Interfacial Hydrogen Bonding**
Yirui Zhang, Massachusetts Institute of Technology, Cambridge, MA12:15-12:35 **The Effect of Titania Covering: Retarding the RWGS Reaction in Selective CO Methanation**
David Kumi, Coastal Carolina University, Conway, SC

- 12:35-12:55 **Recovery of Hydrocarbons from Organic Wastewaters by Catalytic Hydro-De-Heteroatoms Under Hydrothermal Conditions**
Liu Shetian, Southwest University, China
- 12:55-13:15 **Engineering RNA as Anion Polymers for Programmable Self-Assembly of Nano-Structures for Applicators in the Fields of Medicine and Materials**
Kai Jin, The Ohio State University, Columbus, OH
- 13:15-13:35 **Advancing Light-Mediated Ni Catalysis using Physical Organic Techniques**
Ana Bahamonde, University of California Riverside, Riverside, CA
- 13:35-14:15 **Lunch Break** @ Coral Room
- Chair: Ana Bahamonde**, University of California Riverside, Riverside, CA
- 14:15-14:35 **Turning Glycerol to Value-Added Chemicals in the Absence of External Hydrogen Over Copper Catalysts Supported on SBA-15-Type Materials Containing Zirconium**
Ricardo Jose Chimentao, Universidad de Concepcion, Chile
- 14:35-14:55 **Renewable Sources for the Production of Sustainable Clean Fuels: Need of Catalysts, or Not?**
Youssef Berro, PROMES-CNRS, France
- 14:55-15:15 **What are the Oxidizing Intermediates in the Fenton and Fenton-Like Reactions? A Short Review**
Dan Meyerstein, Ariel University, Israel
- 15:15-15:35 **Advanced Catalysts to Decarbonize Our Future?**
Mohammad Asadi, Illinois Tech, Chicago, IL
- 15:35-15:55 **Reductive Amination of Carbonyl Compounds from Biomass Feedstocks, A Catalytic Green Route for Synthesis of Primary Amines and Amino Acids**
Doris Ruiz, University of Concepcion, Chile
- 15:55-16:15 **Direct Conversion of Methane to Value-Added Hydrocarbons using Hybrid Catalysts of Ni/Al₂O₃ and K-Co/Al₂O₃**
Anusorn Seubsai, Kasetsart University, Thailand
- 16:15-16:25 **Break** @ Foyer Area
- 16:25-16:45 **Coupling of Alternating Current to Transition-Metal Catalysis**
Sergey N. Semenov, Weizmann Institute of Science, Israel
- 16:45-17:05 **Synthesis of Cu Nanosheets on Macroporous Ni-GO Skeleton in Application of Wire-Like Supercapacitors with High Energy Density**
Ruitao Zhou, Hong Kong Polytechnic University, Hong Kong
- 17:05-17:25 **Stability and Ion Pairing of Alkalides in Organic Solutions**
Rene Riedel, Imperial College London, UK
- 17:25-17:45 **Template-Assisted Synthesis of Single-Atom Catalysts Supported on Highly Crystalline Vanadium Pentoxide for Stable Oxygen Evolution**
Ki Ro Yoon, Korea Institute of Industrial Technology, South Korea
- 17:45-18:05 **Exploiting Subnanometer Cluster Size, Atomic Composition and Support Effect in Selective Dehydrogenation and Hydrogenation Reactions**
Stefan Vajda, J. Heyrovský Institute of Physical Chemistry, Czech Republic

- 18:05-18:25 **IL Properties of Yttrium-Doped Barium Titanate for High Performance Multilayer Ceramic Capacitors**
Mohammed Tihthi, Institute of Ceramic and Polymer Engineering, Hungary
- 18:25-18:45 **Scope of Metal Loaded ZrO₂ Catalysts in the Selective Oxidation of 1,2-Dichlorobenzene**
VSR Rajasekhar Pullabhotla, University of Zululand, South Africa
- 18:45- Departures

Notes



DAY 4

**FEBRUARY
23, 2023
ONLINE**

Join the meeting

<https://us06web.zoom.us/j/87452834790?pwd=em1uLzB1cTVQTEFCYzN4VzhjRTY0UT09>

Meeting ID: 874 5283 4790

Passcode: 091181

Pacific Time

06:00-06:10 Opening Remarks & Introduction

Keynote Presentation

06:10-06:40

Potential Hybrid Catalysts for CO₂ Reactions**Martin Schmal**, Federal University of Rio de Janeiro, Brazil

Prof. Martin Schmal is Professor since 1970, became full Professor in 1985 and Emeritus since 2008 at the chemical engineering department of the Federal University of Rio de Janeiro and Professor at the University of S.Paulo since 2014. He is a Member of the Brazilian Academy of Science, elected in 1999 and of the International Catalysis Society since 2000.

Oral Presentations

Catalysis Concepts & Reactions

Chair: **Anand Kumar**, Qatar University, Qatar

- 06:40-07:00 **Nanoscaled Silicon Carbide on Silicon: A New Bandgap Material for Micro- and Optoelectronics and its Unique Properties**
Sergey Kukushkin, Institute of Problems of Mechanical Engineering, Russia
- 07:00-07:20 **Metal- and Acid-Free Activation of Carbonyl Moiety – Esterification of Aryl/Alkyl Acids Catalyzed by N-Halamines**
Bojan Bozic, University of Belgrade, Serbia
- 07:20-07:40 **Catalytic Conversion of CO₂ Over CeO₂ Based Catalysts**
Anand Kumar, Qatar University, Qatar
- 07:40-08:00 **Catalytic Synthesis Mechanisms of Endohedral Carbon Nanostructures**
Umedjon Khalilov, Institute of Ion-Plasma and Laser Technologies, Uzbekistan & University of Antwerp, Belgium
- 08:00-08:20 **Biofunctionalized ZnS Quantum dot/Polypeptide Nanoconjugates with Photocatalytic and Antibacterial Activities for Potential Water Treatment and Disinfection**
Herman Sander Mansur, UFMG, Brazil

Poster Presentation

- 08:20-08:25 **Pharmacological Evaluation of Novel Copper (II) Heterocyclic Diazenyl Pyridinone**
Ahlam Ibrahim Alsulami, University of Jeddah, Saudi Arabia
- 08:25-08:30 Break

Chair: **Diana Sannino**, University of Salerno, Italy

- 08:30-08:50 **Synthesis of a Novel Spinel Nanocomposite for the Photodegradation Application Under Visible light Illumination**
Karim Tanji, Université Sidi Mohammed Ben Abdellah, Morocco
- 08:50-09:10 **Calculating the Adsorption Energy of a Charged Adsorbent in a Periodic Metallic System – The Case of BH₄ Hydrolysis on the Ag(111) and Au(111) Surfaces**
Haya Kornweitz, Ariel University, Israel
- 09:10-09:30 **Antioxidant Nanozymes to Maintain the Redox Environment Within Artificial Red Blood Cells**
Leticia Hosta-Rigau, Technical University of Denmark, Denmark
- 09:30-09:50 **Photo-Assisted Phenol Removal from Aqueous Solution: A Comparison Among Photocatalysts**
Diana Sannino, University of Salerno, Italy
- 09:50-10:10 **Environmental Applications of Photocatalytic TiO₂ Films Obtained by Anodic Oxidation**
Maria Vittoria Diamanti, Politecnico di Milano, Italy
- 10:10-10:30 **Using Photocatalysts to Achieve Germicidal Action**
Mirela Suche, CEMATEP, School of Engineering, Hellenic Mediterranean University, Greece & IMT-Bucharest, Romania

Poster Presentation

- 10:30-10:35 **An Approach to the Investigation of the Electrode-Solution Interfacial Region. Comparison of “Molecular” and “Collective” Effects**
Victor G. Mairanovsky, Sci. Soc. WiGB, Germany
- 10:35-10:50 **Break**
- Chair:** **Izabela Janowska**, University of Strasbourg, France
- 10:50-11:10 **Biocatalytic Nitro Reduction: From Hit to Process**
Amin Bornadel, Johnson Matthey, UK
- 11:10-11:30 ***In Situ* Formation of Cationic π -Allylpalladium Precatalysts in Alcoholic Solvents: Application to C–N Bond Formation**
Frederic Bihel, University of Strasbourg, France
- 11:30-11:50 **Activation Tailoring in Few Layer Graphene-Metal Oxide Composites**
Izabela Janowska, University of Strasbourg, France
- 11:50-12:10 **Metal-Doped TiO₂ Composite Nanofibers with Improved Photocatalytic Performance for Degradation of Organic Pollutants**
Petronela Pascariu, Hellenic Mediterranean University, Greece
- 12:10-12:30 **Catalytic Functionalization of Industrial Filter Textiles for Emission Reduction**
Andreas Roppertz, University of Applied Science Niederrhein, Germany
- 12:30-12:50 **Unraveling the Formation of Benzene in Space**
Marta Castineira Reis, CIQUS, Spain
- 12:50-13:10 **Surface Catalysis for the Self-Assembly of Amyloidogenic Proteins**
Yuri Lyubchenko, University of Nebraska Medical Center, Omaha, NE

Poster Presentation

- 13:10-13:15 **Conversion of Biorenewable High Fructose Corn Syrup Feedstocks to HMF**
Alfred Hagemeyer, Alvacat, USA
- 13:15-13:30 **Break**

Keynote Presentations

13:30-14:00

Potential Drug Development for Epigenetic Enzyme Targets for Cancers

Debbie C. Crans, Colorado State University, Fort Collins, CO



Prof. Debbie C. Crans is a University Distinguished Professor at Colorado State University, Fort Collins, Colorado. Her research interests include Biological, Bioinorganic, Bioorganic and Bioanalytical Chemistries. She received her PhD from Harvard University and Postdoc from UCLA. She received many awards including the 2019 ACS Award for Distinguished Service and Outstanding Research in the Advancement of Inorganic Chemistry, 2015 Arthur P. Cope Scholar award ACS, 2004 Vanadis Award, 2014 AAAS fellow and 2009 ACS fellow. She is a Field Editor of Frontiers in Chemical Biology, an Associate Editor of Coordination Chemistry Reviews and New Journal of Chemistry. She is Councilor for Division of Inorganic Chemistry, ACS. Alternate Councilor for the Colorado Section of ACS. Chair; Vanadis Award Committee. Editorial Boards: Coordination Chemistry Reviews, Journal of Inorganic Biochemistry, New Journal of Chemistry. 2024 Chair, International Coordination Chemistry Conference.

14:00-14:30

Plastic Trash to Monomers and Intermediates – PTMI

Anne M. Gaffney, Chief Science Officer for INL's Energy, Idaho Falls, ID



Prof. Anne M. Gaffney is the Chief Science Officer of Idaho National Laboratory and Distinguished National Lab Fellow (2014 – present). She has thirty-four years of experience working in industry inventing and commercializing new technologies for major chemical manufacturing companies including Koch Industries, Lummus Technology, Dow, Dupont and ARCO Chemical Company. She has authored 155 publications and 257 patents. Dr. Gaffney is also a distinguished Joint Appointment Fellow at the University of South Carolina (2018 – present) where she is the Technical Director of the National Science Foundation Center for Rational Catalyst Synthesis. Some of her recent awards include: the 2019 American Chemical Society, Energy & Fuels, Distinguished Researcher Award in Petroleum Chemistry; the 2015 Eugene J. Houdry Award of the North American Catalysis Society; the Chemical Heritage Foundation, Women in Science Inductee, 2014; and the American Chemical Society, Industrial Chemistry Award, 2013. Dr. Gaffney received her BA in chemistry and mathematics from Mount Holyoke College and her Ph.D. in physical organic chemistry from University of Delaware.

14:30-15:00

High Oxidation State Arylimido -Alkylidene Complexes with Vanadium and Niobium Complexes as Catalysts for Olefin Metathesis Polymerization

Kotohiro Nomura, Tokyo Metropolitan University, Japan



Prof. Kotohiro Nomura finished his master studies in University of Tokyo and joined as a research scientist in Sumitomo Chemical Co., Ltd in 1988. He received his Ph.D. in 1993 from Osaka University and joined Massachusetts Institute of Technology as a postdoctoral fellow. He once returned Sumitomo and became an associate professor in Nara Institute of Science and Technology in 1998. Since 2010, he has been a full professor in Tokyo Metropolitan University. He has co-authored more than 350 publications, and his recent research focuses on design of molecular catalysts for efficient carbon-carbon bond formation and chemo-specific organic transformations.

15:00-15:10

Break

Oral Presentations

Chair: **Reyna Natividad**, Universidad Autonoma del Estado de Mexico, Mexico

- 15:10-15:30 **Analysis of Coumarins as Organic Photocatalyst Used in Organic Synthesis**
Selene Lagunas Rivera, Universidad de Guanajuato, Mexico
- 15:30-15:50 **3D-Printed TiO₂ NPs Photocatalysts Design: Photodegradation of Air and Water Contaminants**
José Bonilla-Cruz, CIMAV, Mexico
- 15:50-16:10 **Design and Use of a Pd/B-Dual Catalyzed Glycosylation for the De Novo Synthesis of Oligosaccharide**
George A. O'Doherty, Northeastern University, Boston, MA
- 16:10-16:30 **Structural Determinants of Substrate Recognition and Catalysis by Oligosaccharide Processing Enzymes**
Tarsis G Ferreira, University of Houston, Houston, TX
- 16:30-16:50 **Measuring Charge Carrier Energetics and Transport in Photocatalytic Materials with Ultrafast X-ray Spectroscopy**
Scott Cushing, California Institute of Technology, Pasadena, CA
- 16:50-17:10 **Quantum Dots for Photoelectrochemical Water Splitting**
Oomman K Varghese, University of Houston, Houston, TX
- 17:10-17:30 **Photo-Assisted CO₂ Chemical Reduction in Capillary Reactors**
Reyna Natividad, Universidad Autonoma del Estado de Mexico, Mexico

Poster Presentation

- 17:30-17:35 **Metal supported Activated Carbon Monolith Catalysts from Brown Coal for Environmental Applications**
Fatima Shahid, Monash University, Australia

17:35-17:40 **Break**

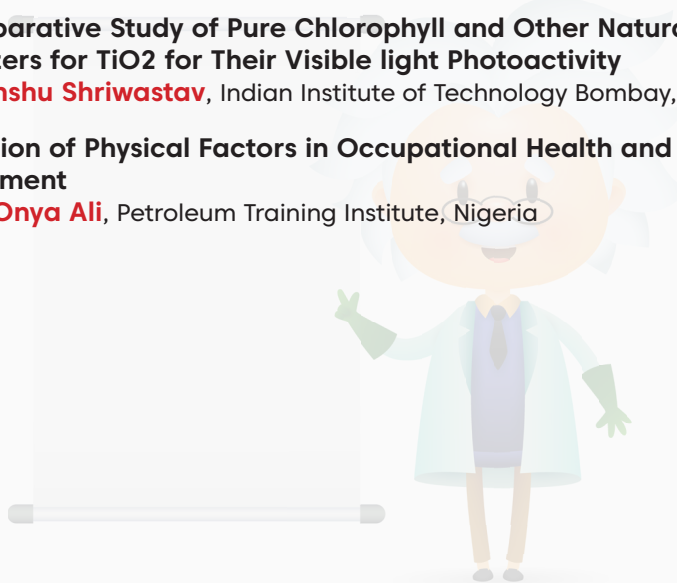
Chair: **Sujun Guan**, Toyo University, Japan

- 17:40-18:00 **Thermal Decomposition Mechanism of Meldrum's Acid and its Derivatives - Theoretical Thermochemical and Kinetic Insights for Ketenes Formation**
Pitambar Poudel, University of Canterbury, New Zealand
- 18:00-18:20 **Syntheses and Structures of Gallyliron Complexes with Pyridine Ligands and Their Reactions with α , β -Unsaturated Esters**
Takako Muraoka, Gunma University, Japan
- 18:20-18:40 **Design and Synthesis of Metallo Supramolecular Catalysts Functionalized with Lewis Acidic Sites in the Two-Phase Solvent Systems and Analysis of the Interface Between Organic and Aqueous Phases**
Shin Aoki, Tokyo University of Science, Japan
- 18:40-19:00 **Chemical Approaches Toward Understanding Cysteine Glycosidase Catalysis**
Akihiro Ishiwata, RIKEN, Japan
- 19:00-19:20 **Design of Z-Scheme Photocatalysis for Light-to-Chemical Conversion**
Akinobu Nakada, Kyoto University, Japan

- 19:20-19:40 **Preparation of a Stable CdS Photoanode for CO₂ Reduction Under Visible-light Irradiation**
Masanobu Higashi, Osaka Metropolitan University, Japan
- 19:40-20:00 **Enhanced Photocatalytic Performance of TiO₂ Nanotube Photocatalyst by Anodization**
Sujun Guan, Toyo University, Japan

Poster Presentation

- 20:00-20:05 **Ammonia Synthesis from H₂O and N₂ using Ru Catalysts and Electrochemical Cells with Phosphate Electrolytes**
Jun Kubota, Fukuoka University, Japan
- 20:05-20:10 **Break**
- Chair: Amritanshu Shrivastav**, Indian Institute of Technology Bombay, India
- 20:10-20:30 **Biocatalytic CO₂ Hydrogenation into Formic Acid by Immobilized Bacterial Cells**
Ki-Seok Yoon, Kyushu University, Japan
- 20:30-20:50 **α -Functionalization of Carboxylic Acids Driven by Boron Catalyst and Visible light**
Yohei Shimizu, Hokkaido University, Japan
- 20:50-21:10 **Design of Intercalation Catalysts by Use of Anion-Exchangeable Layered Inorganic Hydroxides**
Takayoshi Hara, Chiba University, Japan
- 21:10-21:30 **Rational Design of Coaxial CdS@ZnO Nanowire Array and Efficient Photodegradation of Methylene Blue**
Xiuxiu Dong, Jiangsu University, China
- 21:30-21:50 **Efficiency of Iron Nickel Bimetallic Catalysts in Chemo Selective Hydrogenation of Carbonyl Compounds**
Muhammad Sadiq, University of Malakand, Pakistan
- 21:50-22:10 **Stimuli-Induced Organocatalysis in Aqueous Media**
Chandan Maity, Vellore Institute of Technology, India
- 22:10-22:30 **A Comparative Study of Pure Chlorophyll and Other Natural Pigments as Sensitizers for TiO₂ for Their Visible light Photoactivity**
Amritanshu Shrivastav, Indian Institute of Technology Bombay, India
- 22:30-22:50 **Evaluation of Physical Factors in Occupational Health and Safety in a Learning Environment**
Peace Onya Ali, Petroleum Training Institute, Nigeria



DAY 5

**FEBRUARY
24, 2023
ONLINE**

Join the meeting

<https://us06web.zoom.us/j/87452834790?pwd=em1uLzB1cTVQTEFCYzN4VzhjRTY0UT09>

Meeting ID: 874 5283 4790

Passcode: 091181

Pacific Time

Oral Presentations

Energy & Materials

Chair: **Helanka J. Perera**, Higher Colleges of Technology, UAE

- 06:00-06:20 **Hydrodeoxygenation of Esters Over Bifunctional Transition Metal Phosphide Catalysts**
Ivan Shamanaev, Boreskov Institute of Catalysis, Russia
- 06:20-06:40 **Molecular Modeling of Promotion Effects in Cobalt Catalyzed Fischer-Tropsch Synthesis**
Ali Can Kizilkaya, Izmir Institute of Technology, Turkey
- 06:40-07:00 **Castor Oil-Based Polyurethane Foam Infused with Modified Diatomaceous Earth for the Removal of Crude Oil**
Helanka J. Perera, Higher Colleges of Technology, UAE
- 07:00-07:20 **Flexible and Stretchable Corrugated Monocrystalline Silicon Solar Cells**
Nazek El-Atab, King Abdullah University of Science and Technology, Saudi Arabia
- 07:20-07:40 **Effect of TiO₂ - rgo Nanocomposite in Dye Sensitized Solar Cells**
Jasper Ejovwokoghene Ikpesu, University of the Witwatersrand, South Africa
- 07:40-08:00 **High Xylitol Yield from Fresh Corncob: An Optimized One-Pot Approach**
Yaime Delgado Arcano, University of Guayaquil, Ecuador
- 08:00-08:20 **Metal Oxides Nanoparticles and Nanocomposites for Ammonium Removal from Water**
Thamer Adnan Abdullah, University of Technology, Iran
- 08:20-08:30 **Break**
- Chair: **Albert Poater**, University of Girona, Spain
- 08:30-08:50 **DFT Towards Predictive Catalysis**
Albert Poater, University of Girona, Spain
- 08:50-09:10 **Ni/La-doped CeO₂ Catalysts for CO₂ Reduction by the Reverse Water Gas Shift Reaction**
Consuelo Alvarez-Galvan, Instituto de Catálisis y Petroleoquímica - CSIC, Spain
- 09:10-09:30 **Wood Fractionation into Valuable Molecules in a Plug Flow Reactor using Hydrogen Free SC Alcohols Flow and Heterogeneous Acid-Base Catalysts**
Nadine Essayem, CNRS, France
- 09:30-09:50 **Understanding the Deactivation Phenomenon of Ni Supported Catalysts**
Jose Valecillos, University of the Basque Country, Spain
- 09:50-10:10 **Colloidal Synthesis of Hybrids Graphene-Mo₂C with Potential Application in Water Splitting**
Daniel Fernández-González, Nanomaterials and Nanotechnology Research Center (CINN-CSIC), Spain

10:10-10:30 **Analysis of Charge Distributions in Functional Transition-Metal Tellurides**
Simon Steinberg, RWTH Aachen, Germany

Poster Presentation

10:30-10:35 **Iron Based Core-Shell Catalysts for Fischer-Tropsch Synthesis in 3D Printed SS Microchannel Microreactors**
Meriç Arslan, North Carolina A&T State University, Greensboro, NC

10:35-10:40 **Break**

Chair: Siaw Foon Lee, The Eduardo Torroja Institute for Construction Science (IETcc), CSIC, Madrid, Spain

10:40-11:00 **Impact of the Strength of Pd-Perovskite Interaction in Natural Gas Vehicle Three-Way Catalysts: A Kinetic Approach**
Granger Pascal, Unite de Catalyse et de Chimie du Solide, France

11:00-11:20 **Hydrogen Spillover. The Forgotten Chemistry**
Mohammed Bettahar, Lorraine University, France

11:20-11:40 **A Novel Bismuth Oxychloride Immobilized on Stainless Steel Slag: Synthesis, Electrochemical Characterization and NO_x Abatement**
Siaw Foon Lee, The Eduardo Torroja Institute for Construction Science (IETcc), CSIC, Madrid, Spain

11:40-12:00 **Chemical and Structural Properties of Graphene – Influence of Reducing Conditions**
Beata Lesiak-Orłowska, Polish Academy of Sciences, Poland

12:00-12:20 **Rare-earth MOF Derived Catalysts for the RWGS Reaction**
Raluca L. Vasile, Instituto de Ciencia de Materiales de Madrid - CSIC, Spain

12:20-12:40 **Heterogeneous Catalysis with Non Critical Materials for Energy and Environmental Applications**
Lucia D'Accolti, University of Bari, Italy

12:40-13:00 **Effects of Zr Addition on the Refinement of θ -Al₁₃Fe₄ and α -Al in an Al-4Fe Alloy**
Zhongping Que, Brunel University London, UK

13:00-13:20 **Decentral Hydrogen**
Paul Grunow, Trinity Solarbeteiligungen GmbH, Germany

Chair: Haibo Ge, Texas Tech University, Lubbock, TX

13:20-13:40 **Polyhydroxybutyrate/Polyethylene Glycol/TiO₂:Sm³⁺ Composites for Methylene Blue Dye Degradation**
Maraolina Dominguez Diaz, Cinvestav, Mexico

13:40-14:00 **Multifunctional Separators for Improved Li-Ion Batteries Durability**
Ion C. Halalay, General Motors R&D, Warren, MI

14:00-14:20 **Lithium Superoxide Stabilization through Ir₃Li and Implication Toward High Energy Capacity Li-O₂ Batteries**
Hsien-Hau Wang, Argonne National Laboratory, Lemont, IL

14:20-14:40 **Distal Functionalization *via* Transition Metal Catalysis**
Haibo Ge, Texas Tech University, Lubbock, TX

14:40-15:00 **Catalytic Reactivity of Pd-Cu/Al₂O₃ for Catalytic Hydrogen Combustion**
Jongho Kim, University of Newcastle, Australia

15:00-15:20 **Transition-Metal-Catalyzed C(sp³)-H Carboxylation of CO₂**
Tsuyoshi Mita, Hokkaido University, Japan

Poster Presentation

15:20-15:25 **Plasma-Catalytic Processes for Sustainable Future**
Ken Ostrikov, Queensland University of Technology, Australia

15:25-15:30 **Break**

Chair: Chi-Ping Li, National United University, Taiwan

15:30-15:50 **The Progress of Artificial Photosynthesis Project in Japan**
Tohru Setoyama, Mitsubishi Chemical Corp, Japan

15:50-16:10 **Gas-Phase Oxidation of Benzene to Phenol Over Cu Catalyst Doped on Molding MFI Type Zeolite**
Yuichi Ichihashi, Kobe University, Japan

16:10-16:30 **Ionic Liquid Catalyst for Polysaccharide Modification**
Daisuke Hirose, Kanazawa University, Japan

16:30-16:50 **Development of Ionic Liquid-Based Mixed Matrix Membrane for CO₂ Separation**
Nor Naimah Rosyadah Ahmad, Universiti Kebangsaan Malaysia, Malaysia

16:50-17:10 **Manufacturing of Large Area Solid-State Nanopore Array**
Jufan Zhang, University College Dublin, Ireland

17:10-17:30 **PMMA Composite Films for Electrochromic Glass using Ultrasonic Spray Technique**
Chi-Ping Li, National United University, Taiwan

17:30-17:50 **Biodiesel Production in Continuous and Semicontinuous Ultrasonic Reactor**
Francisco Rodriguez, CIDETEQ, Mexico

17:50-18:10 **Study on Wave Function and Reactivity of Carbon on the Active Metal Doped Armchair Edges and Chemisorption of Carbon Dioxide**
Jie Zhang, University of Shanghai for Science and Technology, China

18:10-18:30 **Design and Synthesis of Merrifield Resin-Supported Binuclear Dioxidovanadium(V) Complexes for the Solvent-Free Catalytic Oxidation of Light Aliphatic Alcohols**
Chanchal Haldar, Indian Institute of Technology (Indian School of Mines) Dhanbad, India

18:30-18:50 **Economic Growth: The Nexus of Oil Price Volatility and Renewable Energy Resources Among Selected Developed and Developing Economies**
Muhammad Siddique, University of Malakand, Pakistan



BALTIMORE, MD

2017



PARIS, FRANCE

2018



HOUSTON, TX

2019



LOS ANGELES, CA

2020



VIRTUAL

2021



SAN FRANCISCO, CA

2022

About United Scientific Group

United Scientific Group (USG) is a nonprofit organization with tax-exempt status under Section of Internal Revenue Code 501(c)(3) of the United States of America. USG has a history of successfully organizing and managing scientific meetings, symposiums and panel discussions ranging from 50 to 350 participants, throughout the United States of America and internationally.

USG's vision is to create various scientific networking platforms by organizing conferences to bridge the gap between research and business for the translation of scientific discoveries and innovative thoughts into implementable solutions and products which benefit humankind. USG is led by a group of senior scientists as the board of directors, who are committed to work together and contribute their best services to the scientific community by supporting scientific meeting organization and open access content publication.

We wish to see you at
CCE-2024 Boston, MA



UNITED SCIENTIFIC GROUP (A non profit organization)

8105, Suite 112, Rasor Blvd, Plano, TX 75024, USA

Ph: +1-469-854-2280/81 Toll Free: +1-844-395-4102

Email: catalysis@uniscigroup.org Web: <https://catalysis.unitedscientificgroup.org/>