

Dear All,

Greetings from Catalysis Society of India, Baroda Chapter!!! Hope you all are doing well.

It gives us immense pleasure to inform you that Catalysis Society of India, Baroda Chapter is organizing a virtual seminar on "**Opportunities of Catalysis for Sustainable Energy Technologies and More**" by **Prof. Matthias Beller** on **13th September 2022, Tuesday at 4 PM (IST)**. On behalf of the CSI-Baroda chapter, very much delighted to invite you all to attend the Webinar . **The details and link for attending the are provided below.**

Please use the link below to join the webinar:

Please click the link below to join the webinar:

<https://zoom.us/j/95134439146?pwd=WmFNRHAXeFZLOXd0QU1ZaFIwRkpmUT09>

Passcode: 541799



Topic: Opportunities of Catalysis for Sustainable Energy Technologies and More

Speaker : Prof. Matthias Beller, Director, Leibniz Institute for Catalysis.V. (LIKAT) Rostock, Germany

Date: 13-09-2022; Time : 4PM (IST)
Venue: Virtual via ZOOM

ABSTRACT

The cost-effective and waste-free synthesis of materials, life science goods and all kinds of organic products require efficient chemical transformations. In this regard, development of more active and selective catalysts constitutes a key factor for achieving improved processes and providing the basis for a sustainable chemical industry and society. Despite continuous

advancements in all areas of catalysis, still organic syntheses as well as the industrial production of most chemicals can be improved significantly in terms of sustainability and efficiency. In the talk, it will be shown how new and improved homogeneous and heterogeneous catalysts can be developed by learning from each other. Specifically, the phenomenon of cooperative catalysis will be addressed in the context of non-noble metal-based catalysts. In detail, it will be demonstrated that recently developed molecular-defined as well as nano-structured cobalt and iron catalysts enable catalytic (de)hydrogenation processes with high yields and unprecedented selectivity. Examples which demonstrate the potential of such catalytic processes with bio-relevant metal complexes compared to more traditional catalytic reactions will also include reactions for energy technologies.

Selected recent references:

[1] Wei, Duo; Sang, Rui; Moazezbarabadi, Ayeshe; Junge, Henrik; Beller, Matthias *JACS Au*, 2022, 2, 1020-1031. Homogeneous Carbon Capture and Catalytic Hydrogenation: Toward a Chemical Hydrogen Battery System.

[2] Marx, Maximilian; Frauendorf, Holm; Spannenberg, Anke; Neumann, Helfried; Beller, Matthias *JACS Au*, 2022, 2, 731-744. Revisiting Reduction of CO₂ to Oxalate with First-Row Transition Metals: Irreproducibility, Ambiguous Analysis, and Conflicting Reactivity.

[3] Liang, Hong-Qing; Beweries, Torsten; Francke, Robert; Beller, Matthias *Angewandte Chemie International Edition*, 2022, 61, e202200723. Molecular Catalysts for the Reductive Homocoupling of CO₂ towards C₂+ Compounds.

[4] Khamespanah, Fatemeh; Marx, Maximilian; Crochet, David B.; Pokharel, Uttam R.; Fronczek, Frank R.; Maverick, Andrew W.; Beller, Matthias *Nature Communications*, 2021, 12, 1997. Oxalate production via oxidation of ascorbate rather than reduction of carbon dioxide

About the Speaker:

Prof. Matthias Beller, obtained his PhD in 1989 working with Lutz F. Tietze at the University of Göttingen. After a postdoctoral stay with Barry Sharpless at the Massachusetts Institute of Technology (MIT), Cambridge, MA, USA, he worked in research at Hoechst AG, Frankfurt, Germany, for five years. He also worked as Associate Professor for Inorganic Chemistry at the Technical University of Munich, Germany. In 1998, he relocated to Rostock as Director for the Leibniz-Institute for Catalysis (LIKAT).

Prof. Beller has made significant contributions in both molecular and heterogeneous catalysis and his research focuses on homogeneous catalysis, especially of transition-metal catalysts, aiming for the development of new, environmentally benign catalysts and synthetic protocols as well as their application in industry. Current activities includes oxidations, hydrogenations, hydroformylations, hydroaminomethylation and hydroamination. He has had a significant impact on the field of palladium catalysis—a field in which his work is very widely known—for well over a decade. The work of his group has been published in >1075 original publications, reviews and >150 patent applications have been filed.

He has received several awards including, Spiers Memorial Award of the Royal Society of Chemistry, UK in 2019, Dr. Karl Wamsler Innovation Award for Catalysis Research, Germany in 2017, including the Otto-Roelen Medal and the Leibniz-Price of the DFG. In

2006, “Entrepreneur of the Year” of Rostock , the “Paul-Rylander Award” of the Organic Reaction Catalysis Society of the USA, the Gay-Lussac-Alexander-von-Humboldt-Prize of the French Academy of Sciences and the Emil Fischer Medal of the German Chemical Society. He was awarded an honorary doctoral degree from the University of Antwerp, Belgium and the University of Rennes 1, France.

Prof. Beller is presently, Scientific Director of the Leibniz-Institute for Catalysis, Germany and Vice-president of the Leibniz Association, Germany and a member of 3 German Academies of Sciences including the German National Academia “Leopoldina” and three other Academies of Sciences.

Feel free to circulate this to your local chemistry/catalysis network.

Thanking you,

With Best Regards,
Dr. K .V. Murthy
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