MAX PLANCK INSTITUTE
FOR SUSTAINABLE MATERIALS

Press Release

29 May 2024

Professor Bin Wang receives Bessel Award

Alexander von Humboldt Foundation honours Professor Bin Wang with Bessel Research Award to promote his collaboration with the Max Planck Institute for Sustainable Materials

The Alexander von Humboldt Foundation has awarded the prestigious Friedrich Wilhelm Bessel Research Award to Professor Bin Wang of the University of Oklahoma (USA), an expert in computational catalysis and interfacial chemistry. The award recognizes Professor Wang's outstanding contributions to the fields of physical chemistry and catalysis. The award, which includes a grant of 45,000 euros, will support a research stay in Germany for up to 12 months to establish a collaboration with the Computational Materials Design department at the Max Planck Institute for Sustainable Materials (MPI SusMat).

“Bin's expertise perfectly complements our strengths in simulating complex materials in realistic environments. Together, we aim to advance the computational simulation of material interactions and degradation in electrochemical and corrosive environments,” says Professor Joerg Neugebauer, head of the Computational Materials Design department. “I am delighted to receive the prestigious Bessel Award. Our goal is to model the thermodynamic and kinetic properties of chemical reactions at the solid-liquid interface and their response to external stimuli,” says Wang. These simulations are crucial for designing frameworks to model heterogeneous catalysis. The teams plan to combine their expertise in photocatalytic simulations and defect engineering to develop strategies for manipulating electronic properties.

Bin Wang, who teaches in the School of Sustainable Chemical, Biological, and Materials Engineering at the University of Oklahoma, has received numerous awards, including an Emerging Investigator recognized by the Royal Society Catalysis Science & Technology, an Influential Researcher by the American Chemical Society (ACS) Industrial & Engineering Chemistry Research, an Outstanding Junior Faculty Award from the ACS Division of Computers in Chemistry, an Early Career Award from the United States Department of Energy, and the Regents’ Award for Superior Research and Creative Activity from the University of Oklahoma. Throughout his academic and professional career, he has conducted groundbreaking research in chemical engineering, condensed matter physics, and computational molecular engineering.

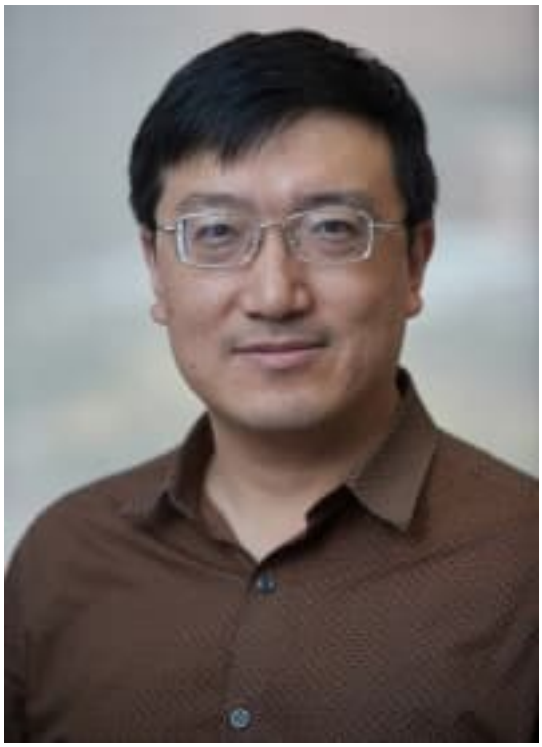
The Friedrich Wilhelm Bessel Research Award is granted annually by the Alexander von Humboldt Foundation to 20 internationally renowned scientists and scholars from abroad. Named after the distinguished German astronomer and mathematician Friedrich Wilhelm Bessel, the prize is funded by the German Federal Ministry of Education and Research. Awardees are free to choose any host institution in Germany, making the award a significant honour for both the recipient and the host institution.

Selected publications:

Oxygen vacancies alter methanol oxidation pathways on NiOOH, V. Phan, Q. P. Nguyen, B. Wang, I. J. Burgess, *J. Am. Chem. Soc.* 146, 7, 4830–4841 (2024)

Plasmonic energetic electrons drive CO_2 reduction on defective Cu_2O, T. Le, T. Salavati-fard, B. Wang, *ACS Catal.* 13, 6328–6337 (2023)

Solvent-mediated charge separation drives alternative hydrogenation path of furanics in liquid water, Z. Zhao, R. Bababrik, W.H. Xue, Y.P. Li, N. M. Briggs, D.-T. Nguyen, U. Nguyen, S. P. Crossley, S. W. Wang, B. Wang, D. E. Resasco, *Nature Catalysis*, 2, 431-436 (2019)



Professor Bin Wang of the University of Oklahoma (USA), received the prestigious Friedrich Wilhelm Bessel Research Award by the Alexander von Humboldt Foundation. The award recognizes Wang's outstanding contributions to the fields of physical chemistry and catalysis. Copyright: Bin Wang

Materials science is facing major challenges: The steel industry alone contributes eight percent of global carbon dioxide emissions. Each year, e-waste, equivalent to 350 mega cruise ships, is discarded or incinerated rather than recycled, despite containing valuable metals. At the Max Planck Institute for Sustainable Materials (MPI SusMat), we are exploring climate-neutral, resource-conserving approaches to produce, utilize, and recycle essential materials for modern societies. We seek to produce metals using hydrogen instead of fossil fuels, extend material lifespans, enhance recyclability, and minimize waste. When developing materials that fulfil these requirements, we are increasingly relying on artificial intelligence to make the process significantly more efficient. The institute conducted its research under the name Max-Planck-Institut für Eisenforschung GmbH until 2024.

Stay up to date and follow us on LinkedIn, YouTube and X.

Contact:
Yasmin Ahmed Salem, M.A.
Press and Public Relations Officer
E-Mail: y.ahmedsalem@mpie.de
Tel.: +49 (0) 211 6792 722
https://www.mpi-susmat.de