



ENI AWARD 2024

Advanced Environmental Solutions

Holger Braunschweig

Winner

Waste and Toxicity Avoidance through Transition-Metal-Free Direct Nitrogen Functionalization using Light Elements

Biography

Prof. Dr. Holger Braunschweig, ML FRSC, is Chair and Head of Inorganic Chemistry, and Founding Director of the Institute for Sustainable Chemistry & Catalysis with Boron (ICB), at the JuliusMaximilians-Universität Würzburg, Germany. Prof. Braunschweig received his academic training in chemistry at RWTH Aachen, where he obtained his PhD in 1990. After postdoctoral research with Prof. Lappert, FRS, at the University of Sussex, he returned to Aachen for his habilitation with Prof. P. Paetzold. In 2000 he was appointed Senior Lecturer at Imperial College London and was soon promoted to Reader, before taking up the prestigious Chair of Inorganic Chemistry at the University of Würzburg as the successor of Prof. Dr. Dr. h.c. mult. Helmut Werner. Braunschweig's research interests are centered around the synthesis of molecular organometallic and main-group species, their electronic and chemical properties, and their applications in synthesis, catalysis and material science. In particular, his work on transition-metal borylene complexes continues to have a significant impact on contemporary organometallic chemistry. Braunschweig's research over the past 15 years has led to major breakthroughs in the synthesis of reactive maingroup and transition metal compounds. This includes the discoveries of the first compounds with boron-oxygen and boron-boron triple bonds and the first low-valent complexes of beryllium. However, it was Braunschweig's demonstration

of the first activation and dimerization of dinitrogen by a non-metal element that has made the broader scientific community truly appreciate the abilities of the main-group elements. This is reflected in the citation rate of his 2018 Science article, which since its publication has received over 900 citations. Braunschweig's discoveries have led to the publication of over 730 publications, including around 230 publications in journals with impact factors higher than ten. He has published a large number of articles in the leading journals Science, Nature, Nature Chemistry, and over 150 articles in the top chemistry journal Angewandte Chemie alone. Braunschweig has an h-index of 77 (Web of Science database). Braunschweig's achievements have been recognized by his peers in a variety of ways, including major international and national prizes (the 2024 ACS M. Frederick Hawthorne Award, the inaugural Royal Society of Chemistry Mond-Nyholm Award in 2021, the 2016 German Chemical Society Alfred Stock Memorial Award, the 2014 Royal Society of Chemistry Main Group Award, the 2009 Gottfried Wilhelm Leibniz Prize of the DFG), prestigious grants (two ERC Advanced Grants, the Reinhard Koselleck Grant of the DFG, a 19M€ grant for the construction of the Institute for Sustainable Chemistry & Catalysis with Boron) and memberships of four scientific academies (the German, Bavarian, North Rhine-Westfalian, and Indian academies). Braunschweig has an extensive record of service to his university, the boron and main-group chemistry communities, and the scientific community as a whole. He served as a member of the German Research Foundation (DFG) advisory panel for chemistry for eight years and was subsequently appointed to the DFG's review board for research training groups in 2019. Braunschweig currently holds or has held similar advisory positions at the German Council of Science and Humanities, the Leibniz Institute for Catalysis, as well as for the leading journals Angewandte Chemie, Dalton Transactions, Organometallics, and European Journal of Inorganic Chemistry.