



ENI AWARD 2018

Energy Transition

Omar Yaghi

Winner

Ultra-high Methane Storage, Carbon Dioxide Capture and Conversion, and Atmospheric Water Harvesting using Framework Materials

Biography

Omar M. Yaghi received his Ph.D. in Chemistry from University of Illinois at Urbana-Champaign, and was an NSF Postdoctoral Fellow at Harvard University. He started his independent career as Assistant Professor in 1992 at Arizona State University, moved to University of Michigan at Ann Arbor as Robert W. Parry Chair Professor of Chemistry in 1999, and then UCLA in 2006 as Christopher S. Foote Professor of Chemistry and Irving and Jean Stone Chair Professor in Physical Sciences. Since 2012 he has been the James and Neeltje Tretter Chair Professor of Chemistry at University of California, Berkeley, and a Senior Faculty Scientist at Lawrence Berkeley National Laboratory. He is the Founding Director of the Berkeley Global Science Institute whose mission is to build centers of research in developing countries and provide opportunities for young scholars to discover and learn, and the Co-Director of the Kavli Energy NanoSciences Institute focusing on the basic science of energy transformation on the molecular level, and the California Research Alliance by BASF supporting joint academia-industry innovations.

His work encompasses the synthesis, structure and properties of inorganic and organic compounds and the design and construction of new crystalline materials. He is widely known for pioneering several extensive classes of new materials: Metal-Organic Frameworks (MOFs),

Covalent Organic Frameworks (COFs), and Zeolitic Imidazolate Frameworks (ZIFs). These materials have the highest surface areas known to date, making them useful for hydrogen and methane storage, carbon capture and conversion, water harvesting from desert air, and catalysis, to mention a few. The building block approach he developed has led to an exponential growth in the creation of new materials having a diversity and multiplicity previously unknown in chemistry. He termed this field 'Reticular Chemistry' and defines it as 'stitching molecular building blocks into extended structures by strong bonds'.

Yaghi has been honored with many awards for his scientific accomplishments, including the Sacconi Medal of the Italian Chemical Society (2004), the Materials Research Society Medal (2007), the American Chemical Society Award in the Chemistry of Materials (2009), the King Faisal International Prize in Science (2015), the Royal Society of Chemistry Spiers Memorial Award (2017), the Albert Einstein World Award of Science conferred by the World Cultural Council (2017), the BBVA Foundation Frontiers of Knowledge Award in Basic Sciences (2018), and the Wolf Prize in Chemistry (2018). He published over 250 articles and is listed among the most highly cited chemists worldwide.