



**ENI AWARD
2019**

Energy Frontiers

Michael Aziz

Winner

Organic Aqueous Flow Battery for Massive Electrical Energy Storage

Biography

Michael J. Aziz was born in 1956 in Gardner, Massachusetts, USA, a grandchild of Lebanese immigrants, and raised in West Boylston, Massachusetts. He earned a Bachelor of Science degree in Applied Physics from the California Institute of Technology in 1978. He earned a Master of Science degree and a Ph.D. from Harvard University in 1980 and 1983, respectively, in Applied Physics, studying crystal growth kinetics under the supervision of David Turnbull. In 1984-1985 he was a Eugene P. Wigner Postdoctoral Fellow at Oak Ridge National Laboratory, where he studied materials processing with ion and laser beams. He has been on the faculty at what is now the Harvard John A. Paulson School of Engineering and Applied Sciences since 1986, and is now the Gene and Tracy Sykes Professor of Materials and Energy Technologies.

Aziz has made a number of contributions to the fields of applied physics and materials science. He was awarded the Bruce Chalmers Award by TMS "For basic theoretical and experimental contributions to the understanding of solute trapping, laser processing, and ion beam modifications of surfaces". He has been elected a Fellow of the AAAS "For seminal studies of the non-equilibrium atomic-scale mechanisms underlying modern

materials

processing techniques", a Fellow of the APS "For unique experimental and theoretical contributions to our understanding of the kinetics of crystal growth in covalent systems, and of solute trapping in rapid solidification processing", and a Fellow of the MRS "For innovative contributions to our understanding of the kinetics of nonequilibrium phenomena in materials and for dedication to MRS and the materials community".

As the energy-climate problem has become more urgent, the research interests of Professor Aziz have shifted to energy storage and CO₂ capture. He has directed a multi-investigator research program on stationary electrical energy storage since 2012 and is co-inventor of the aqueous organic redox flow battery, with multiple patents that have been licensed for commercialization. He was the faculty coordinator for the Harvard University Graduate Consortium on Energy and Environment from 2009 to 2018. He developed an energy technology course for a broad audience and is currently authoring a textbook on energy technology.