

Sustainable Energy Generation: Nanotechnology for Enhancing Power, Durability, & Upcycling of Ion Exchange Fuel Cells

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Abstract

Global energy consumption is predicted to increase by around 50% within the next 30 years, and there is a necessity for the continuous growth of renewable sources of energy to achieve a sustainable future. A hydrogen economy based on renewables like hydrogen production, storage, and conversion to electricity is considered a promising solution for the future. The rapid rise in offshore energy generation has also spurred interest in saltwater electrolysis, and fuel cells, which can efficiently process the gas streams generated to integrate seamlessly into the grid. Finally, responsible engineering also requires us to consider upcycling of components, reduction of costs, and durability.

Biography

Miriam Rafailovich received her PhD from Stony Brook University in Applied Nuclear Physics. She then did her postdoctoral work at Brookhaven National Laboratory and the Weizmann Institute. Miriam was professor of Physics and Astronomy at CUNY, Queens College and is currently a distinguished professor at Stony Brook University in the Department of Materials Science and Engineering. Miriam is the director of the Garcia Center for Polymers at Engineered Interfaces (<https://www.stonybrook.edu/commcms/garcia/>). Her research interests span a broad spectrum which includes, Polymer nanocomposites for additive manufacturing, biopolymers, biosensors, tissue engineering scaffolds, nanotoxicology, flame retardant composites, and polymers for green energy applications.

Miriam is also known as a pioneer in the integration of research with education. She has graduated more than 60 PhD and master's students and mentored several hundred undergraduate and high school students from across the United States and abroad. She is the co-author of more than 400 publications in peer reviewed journals and technical review articles and is a Lady Davis Foundation Scholar and a fellow of the American Physical Society.



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