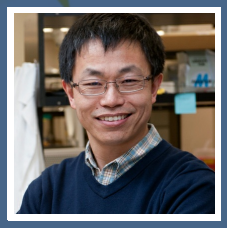
Meeting the Challenges of Alternative Energy



Yushan Yan

Distinguished Engineering Professor, Chemical and Bimolecular Engineering Dean for Research and Entrepreneurship, College of Engineering

CURRENT RESEARCH

Sustainable energy and mobility for the 21st century

One of the grand challenges facing humanity today is the development of an alternative energy system that is safe, clean, and sustainable. Such a system is no longer reliant upon fossil fuels. Dr. Yushan Yan, Distinguished Engineering Professor of Chemical and Biomolecular Engineering and Associate Dean for Research and Entrepreneurship in Engineering at the University of Delaware, is developing what he has coined a distributed renewable electrochemical energy and mobility system (DREEMS) to meet the challenge of alternative energy. DREEMS presents an energy solution that is efficient, affordable, and resilient. Therefore, this research could lead to affordable, zero-emission fuel cell cars and enable the widespread deployment of the renewable solar and wind energy.

At the foundation of this new energy system are a number of electrochemical devices including fuel cells, electrolyzers, and flow batteries. For all these devices, polymer electrolytes and electrocatalysis play a critical role in controlling their performance and cost, and thus their commercial viability. Dr. Yan and his team have developed the most stable polymer hydroxide exchange membranes and the most active non-precious metal hydrogen oxidation reaction catalysts. Additionally, they have a new redox flow battery concept that allows for unprecedented high voltage, producing high power and energy at low costs. His team of about 20 researchers including students, postdocs, and professional scientists collaborate with individuals from industry, national labs, and other academic institutions, bringing varying expertise to important research questions. Therefore, through multidisciplinary collaboration and innovative technologies, Dr. Yan is at the...

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AFFILIATION

University of Delaware

EDUCATION

- Ph.D., in Chemical Engineering, 1996 , Caltech
- B.S., in Chemical Physics, 1988 , University of Science and Technology of China

AWARDS

- Presidential Chair, University of California, 2010
- Donald Breck Award, International Zeolite Association, 2010
- Fellow, American Association for the Advancement of Science, 2008
- Changjiang Professor, Zhejiang University, China, 2007
- University Scholar, University of California Riverside 2006

RESEARCH AREAS

Environment, Clean Energy, Space

FUNDING REQUEST

Your contributions will support the continued research of Dr. Yushan Yan, of the University of Delaware, as he develops unique approaches to design fuel cells and flow batteries. Donations will fund the necessary $1-1.5M/year required to support personnel, equipment, and continued research. Be a part of developing sustainable energy and mobility for the future.