

Emerging Materials Congress 2019: Advances in membrane technology for paving the way for water sustainability- Amira Abdelrasoul, University of Saskatchewan

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Clean water as basic human need isn't available to 1.4 -1.8 billion people round the world. it's essential to DC research trends toward sustainable water and wastewater treatment technologies which will solve the prevailing industrial and environmental issues, especially when it involves solutions which will be successfully commercialized on the worldwide scale. Membrane applications are the foremost effective and sustainable methods of addressing environmental problems in treating water and wastewater to satisfy or exceed stringent environmental standards. Nevertheless, membrane fouling is one among the first operational concerns that's currently hindering its widespread application. Her major research focus is to optimize synthesis of biomimetic membranes designed with antifouling, and selective permeation which will pave the way for the assembly of unpolluted water.

Sustainable energy is that the key solution for addressing major concerns about the longer term like global climate change, environmental protection, and balanced growth of the economy and society. The past 20 years have witnessed advancement in economic development in many nations. However, the rapid economic process , industrial advancement, energy shortage, deterioration of the environment and increasing demands of growing populations pose an enormous threat for future generations. for several years, economic development has been the key focus of the many policy makers in sustainable development until the inception of the Kyoto protocol agreement in 1997, which incorporates environmental quality as an important variable for sustainable development. With global energy consumption and electricity demands expected to

double within the next twenty-five years, major opportunities for innovation in how energy is produced, stored, transmitted and used have begun to open up. especially, there's an enormous interest in sustainable energy technologies capable of improving efficiency and reducing the worldwide carbon footprint.

The development of sustainable energy is, however, restricted by various factors, like the supply of natural resources thanks to regional differences, sensitivity to the environmental impacts of fossil-fuel based energy, increasing water scarcity, and differing economic policies. Development of an approach to sustainable energy that addresses environmental concerns, greenhouse emission emission, cost, availability of resources, and social impact may be a huge challenge. The key focus for attaining energy sustainability is to scale back and slowly replace power generation by fossil fuels with renewable energy sources. Though some aspects of this sustainable approach are being adopted, there are others yet to be translated at a billboard scale. as an example , major concerns about CO₂ (CO₂) emissions in traditional fossil fuel-based power generation has paved the way for several sustainable energy sources like wind and solar, alongside CO₂ capture and sequestration technologies. aside from this, there's a growing recognition of technologies like cogeneration plants, where a mixture of techniques contributes to reduced water demand while generating energy, leading to effective water use to satisfy the demand. Water and energy are the 2 key aspects for sustainable development for the longer term.