**Presentation title: Boosting ethanol electrooxidation of AgSrTiO3 in the dark from the Electro-photocatalytic “memory” effect**



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**Abstract:**

The cost and efficiency of the electro-photocatalyst have a direct impact on the practical use of direct ethanol fuel cells (DEFCs), which are inexpensive and highly effective. Therefore, it is crucial to design and engineer a sophisticated, reasonably priced electro-photocatalyst for ethanol oxidation reaction (EOR). The unique electro-photocatalyst with a memory effect, which can maintain electrocatalytic performance in the dark, has been the subject of recent research. The perovskite structure of SrTiO3 is characterized by its strong photocatalytic and electro-photocatalytic activity, broad surface area, low toxicity, extended service life, and low cost. The capacity of electro-photocatalysts with memory effect to maintain exceptional catalytic efficiency in the absence of light has garnered significant interest in recent times. Due to a restricted capacity for electron storage, electro-photocatalysts with memory effect activities are minimal. As a result, doping SrTiO3 with cations like Ag can change its electrical characteristics, increasing electro-photocatalytic activity. To explore the electro-photocatalytic memory effect of the Ag-doped SrTiO3, we developed a sonochemical approach for its manufacture. X-ray diffraction (XRD), ultraviolet-visible diffuse reflection spectroscopy (UV-vis), transmission electron microscopy (TEM), scanning electron microscopy (SEM), and Fourier transform infrared spectroscopy (FT-IR) were used to investigate the Ag-doped SrTiO3 nano-photocatalyst. Doping SrTiO3 with Ag allowed us to create an Ag-doped SrTiO3 nano- electrophotocatalyst. Under light and after illumination, the Ag-doped SrTiO3 nanophotocatalyst showed excellent performance in ethanol electrooxidation in aqueous alkaline media. The effects of temperature, pH, amount of electro-photocatalyst, and ethanol solution concentration on the photocatalytic activity were examined. It can be speculated that this work paved the way for the engineering and design of electro-nanocatalysts to be employed in high-performance DEFCs.

**Biography:**

Dr. Sara Khadempir studied chemical engineering at Shiraz University, Iran and graduated as MS in 2010. She then joined the research group of Prof. Ahmadpour at Ferdowsi University of Mashhad, Iran. She received her PhD degree in 2016 at the same university under the Ministry of science scholarship. She obtained the position of an Associate Professor at the Quchan University of Technology. She has published more than 10 research articles in SCI (E) journals.)