

O 65. HYDROGEN PEROXIDE FUEL CELL USING CORE-SHELL CATALYSTS

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ABSTRACT: As a result of the on-going global energy crisis and climate change concerns, significant research efforts have been devoted to the development of sustainable and clean energy devices. Nowadays, fuel cells have been approved as a novel energy production technology, which is efficient, economic and environmentally compatible. The fuel cell is a power device which converts the chemical energy into usable electrical and heat energy without burning and using any intermediate unit (Li, et al., 2015). H₂O₂ is one of the liquid base fuels which is used in fuel cells due to the advantages of having high power density and theoretical potential, low activation energy (Song, et al., 2017). Many studies have reported the catalysts for H₂O₂ reduction. At present, noble metal catalysts, such as Pt, Pd, Au, Ag or a combination of these metals, exhibit the highest catalytic performance towards H₂O₂ reduction. In this study, highly active carbon nanotube supported bimetallic catalysts have been synthesized for H₂O₂ fuel cells. Pd-M (M: Ni, Ag, Co, Mn, V, Zn) bimetallic alloy and core shell catalysts have been prepared via NaBH₄ reduction and dendrimer template methods. After the preparation of electrodes; amperometric, voltametric and impedance measurements will be performed by potentiostat device.

Keywords: Energy, hydrogen, fuel cell, hydrogen peroxide, bimetallic catalyst, palladium

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