

Development of methanol fuel cell anodes based on noble metal catalysts

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The development of a viable fuel cell depends on three essential components, namely the anode, cathode and the membrane. Various attempts have been made to design electrodes and membranes which can perform at the optimum level of activity so as to make the fuel cells more efficient and cost effective. Effective utilization of the costly noble metals especially Pt and other noble metals which are used as electro-catalysts for the oxidation reaction is one of the areas where considerable attention has been paid in recent times with a view to reduce the amount of noble metal loading but at the same time retaining sufficient electro-catalytic activity. One of the strategies followed for the effective utilization of noble metals especially Pt, or Pt-Ru is to support them on carbon nano-tubes and other nano-forms of carbon. The presentation will evaluate various combinations of the electrodes namely, Pt, Pt-Ru, Pt-WO₃, and Pt-V₂O₅ loaded on carbon nano materials for their activity in methanol oxidation, and also examine the methods of synthesizing nano-tubes of conducting polymers and their exploitation as supports for anodes for fuel cell applications.