ELECTROCATALYTIC OXIDATION OF METHANOL
ON C/NiZn-Pt ELECTRODE IN ALKALINE MEDIUM

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In the past decades, direct methanol fuel cells (DMFCs) have attracted extensive attention due to its advantages of low operating temperature (<100 °C), easy transportation and storage of the fuel, high energy efficiency, low exhaustion and the fast start-up of fuel [1]. Carbon has been used for many years as a support for industrial precious metal catalysts, and activated carbon, carbon black, graphite and graphitised materials have all been applied in various catalytic processes. For fuel cells the electronic conducting properties of carbon mean that the three-phase boundary (electrode-electrolyte-reactant) can be extended out into the electrode, with significant performance benefits [2]. Carbon is a common choice for supporting electrocatalyst particles in direct alcohol fuel cells because of its large surface area, high electrical conductivity, and porous structure [3]. As catalysis is a surface effect, the catalyst needs to have the highest possible surface area. The results show that the platinum electrodeposited nickel zinc coated graphite electrode has best electrocatalytic activity for the methanol oxidation in the alkaline media.

![Cyclic voltammograms for the methanol oxidation reaction on a:C, b:C/Ni, c:C/NiZn and d:C/NiZn/Pt electrodes at scan rates of 100 mV s⁻¹ in 1.00 M CH₃OH + 1 M KOH at 298 K.](image)

References