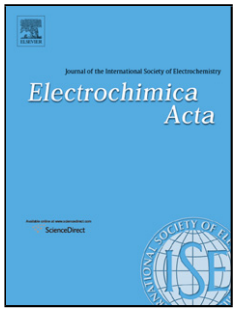

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The electrocatalytic oxidation of carbohydrates at a nickel/carbon paper electrode fabricated by the filtered cathodic vacuum arc technique

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Abstract:

The direct electrochemical behaviour of carbohydrates at a nickel/carbon paper electrode with a novel fabrication method is investigated. The investigation is used for verification the feasibility of using monosaccharides and disaccharides in the application of fuel cell. The selected monosaccharides are glucose, fructose and galactose; the disaccharides are sucrose, maltose and lactose. The modified nickel/carbon paper electrode was prepared using a filtered cathodic vacuum arc technique. The morphology image of the nickel thin film on the carbon paper surface was characterized by scanning electron microscopy (SEM). The existence of nickel was verified by X-ray photoelectron spectroscopy (XPS). The contact angle measurement was also used to characterize the modified electrode. Cyclic voltammetry (CV) was employed to evaluate the electrochemical behaviour of