

Selective Decomposition of Urea by Enzyme Immobilization, for Electrolysis of Ammonium.

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ABSTRACT

It was realized and studied the enzymatic activity of urease, as well as immobilization for the decomposition of urea, by working with concentration of 20 g of urea per liter, simulating the urea contained in urine of animal origin. It was found an increased enzyme activity and reaction rate at neutral pH (7.2), work temperature of 50 ° C and a time of 30 minutes for these parameters; the point of maximum enzyme concentration on enzyme activity was 4687.5U. The enzyme immobilization was carried out using alginate as encapsulating matrix, which showed good chemical kinetics. Electrochemical measurements for electrolysis of ammonium produced by urease selective break down were carried out by the technique of cyclic voltammetry (CV) using a potentiostat (Volta Lab 80 Radiometer Analytical Model PGZ402) and multi wall carbon nanotubes (MWCNT) as catalyst material, synthesized by the technique of chemical vapor deposition (CVD), doped in situ with different metals (Co, Pt and Ru) obtaining greater activity in the anode region for hydrogen formation with multi wall carbon nanotubes doped with Ruthenium.

Keywords: Urease, Immobilization, MWCNT.

