

Zinc-Air Cell Employing Laccase as the Oxygen Reduction Catalyst

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Abstract

Zinc-air cell employing laccase enzyme as the oxygen reduction catalyst has been investigated. Laccase is an oxidoreductase, belongs to the copper-containing enzyme family which attracts many due to its ability to reduce molecular oxygen to water. The test cell consisted of zinc metal foil as the anode and a carbon-based air electrode as the cathode, encapsulated in a single chamber, home-made acrylic board casing. The electrolyte composed of laccase and syringaldazine in a potassium dihydrogen phosphate buffer. The performance of the cell was also evaluated using sodium citrate buffer and potassium citrate buffer. Zinc-air cell utilizing laccase biocatalyst registered an open circuit voltage of 1.2 V and was able to sustain a discharge load of 500 μ A.