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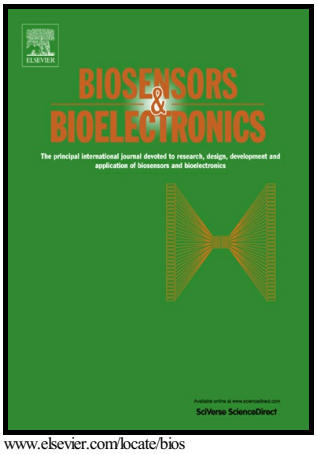

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Preparation, characterization and application of urease nanoparticles for construction of an improved potentiometric urea biosensors

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A B ST R ACT

The nanoparticles(NPs) aggregates of commercial urease from jack beans (*Canavalia ensiformis*) were prepared by desolvation and glutaraldehyde crosslinking and functionalized by cysteamine dihydrochloride. These enzyme nanoparticles (ENPs) were characterized by transmission electron microscopy (TEM), UV and Fourier transform infrared (FTIR) spectroscopy. The TEM images of urease NPs showed their size in the range, 18-100 nm with an average of 51.2 nm.The ENPs were more active and stable with a longer shelf life than native enzyme molecules. The ENPs were immobilized onto chitosan (CHIT) activated nitrocellulose (NC) membrane via glutaraldehyde coupling with 32.22 % retention of initial activity of free ureaseNPs with a conjugation yield of 1.63 mg/cm^2.This NC membrane was mounted at the lower/sensitive end of the ammonium ion selective electrode (AISE) with O-ring and then