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Cyclic Voltametry Study of PANI/ZnOUrease Based Biosensor with Stainless Steel Electrode as Transducer

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Abstract: *The electrochemical characteristic Cyclic Voltametry (CV) was studied for ElectrodepositedPolyaniline (PANI)/ZnOnanocomposite onto a stainless steel transducer. The Cyclic Voltametrywas studied during electrodeposition of PANI/ZnO on the stainless steel electrode.Good cyclic voltammogram for 15 wt% composition was observed as compared to others. The PANI/ZnO film also offers a more symmetrical voltammogram, with oxidation starting at a lower potential (0.05 to 0.08 V) compared to pure PANI, indicating that the presence of the ZnO promotes the electron-transfer of the oxidation process.Cyclic Voltametry of PANI/ZnO/Urease electrode shows the oxidation potential peaks occurs in CV of ZnO-PANI 15% film depicts the oxidized potential at around 0.2V, which is at higher potential as compared to other lower weight %, indicating larger surface area and larger potential window as compared to others. The magnitude of peak current gets increased with increasing concentration of ZnO, which ensure quick response time of the sensor. The CV of PANI/ZnO/Urease in potential window of -0.1 to 0.1V shows resistive effect of PANI. Also, the cyclic voltammogram of PANI/ZnO/Urease 15% shows more ohmic behavior as compared to other compositions and PANI.*

Keywords: Polyaniline, Zinc oxide, Urease, Cyclic Voltametry, Stainless steel, biosensor

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