Green Synthesis of Platinum Nanoparticles Using *Quercus Glauca* Extract and Its Electrochemical Oxidation of Hydrazine in Water Samples

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Facile, rapid and eco-friendly synthesis of platinum nanoparticles (Pt NPs) using aqueous leaves extract of *Quercus glauca* (Qg) has been reported for first time to detection of environmental and human toxic hydrazine. The as-synthesized Pt NPs were characterized by spectroscopic and analytical techniques. The prepared Pt NPs were around spherical in shape and the size range from 5-15 nm. The electrocatalytic performance of hydrazine has been studied by CVs and amperometric techniques. Interestingly, the Pt NPs modified GCE shows a sharp peak at a very lower onset oxidation potential -0.3 V. The fabricated hydrazine sensor showed very lower detection limit, wide linear range, good sensitivity and excellent selectivity of 7 nm, 0.01 to 283 μM , and 1.704 $\mu\text{A}/\mu\text{M}/\text{cm}^2$ respectively. The green synthesized Pt NPs modified GCE sensor was successfully used for the detection of hydrazine (Spiked) in various water samples.

Keywords: *Quercus glauca*, Eco-friendly, Platinum nanoparticles, Hydrazine

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