

## Study on the effect of electrodeposited palladium nanoparticles to the electrochemical properties of carbon fiber paper electrode

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Carbon fiber paper (CFP) has been shown to be suitable a potential electrode material for the construction of biosensors due to its low cost, good electrochemical activity and high mechanical resistance. Previously, we have shown that its electrochemical properties can be improved by the oxygen plasma treatment. However, the life time of the enhancing effect of the plasma treatment is short. In this study, the effect of metallic nanoparticles modification is explored to improve the enhancing effect of plasma treatment redox property of CFP. Interestingly, the electrodeposition of palladium nanoparticle (PdNP) on the CFP was found to not only maintain the enhancing effect of plasma treatment, but also increase the electron transfer efficiency of CFP. The electrochemical properties of the electrodeposited Pd nanoparticles were studied and analyzed in terms of their electrochemical responses, electron transfer efficiency, reproducibility and stability. In summary, the electrodeposition of PdNP is our hope to establish is an optimal surface modification procedure to improve the electrochemical properties of CFP electrode for future biosensor design and development.

### Biography

Chun-Lung Lien earned his Master's degree in the Department of Photonics of National Chiao Tung University, Hsinchu, Taiwan (ROC). He has over 20 years working experience on working for CMOS analog and digital circuit design. He has been involved and participated in numerous projects mainly in the fields of National sub-micro project, power and high voltage integrated circuits, and optoelectronics. He has also served as a project researcher in the Dynamic Random Access Memory and Static Random Access Memory projects. He has one patent in Taiwan. He is currently a PhD candidate student in the Department of Biological Science and Technology, in National Chiao Tung University, Hsinchu, Taiwan (ROC).

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