RAMAN SPECTROSCOPY FOR CHARACTERIZING GOLD NANOPARTICLES ON POLYANILINE THIN FILMS

YI-HSIU CHEN, CAI-WEI LIN, CHUN-GUEY WU, and BOR-CHEN CHANG, *Department of Chemistry, National Central University, 300 Jung-Da Road, Chung-Li 32001, Taiwan*.

Gold (Au) nanoparticles were prepared using two different solvents, water ($H_2O$) and chloroform ($CHCl_3$), before they adopted the conducting polymer, polyaniline (PANI), as the support for the catalysis of the aerobic oxidation reaction of benzyl alcohol ($C_6H_5CH_2OH$). The oxidation products, benzaldehyde ($C_6H_5CHO$) and benzoic acid ($C_6H_5COOH$), were successfully detected using the high performance liquid chromatography (HPLC). Our results show that the Au nanoparticles prepared by different solvents exhibit distinctively different catalytic activities. Nevertheless, traditional characterization methods such scanning electron microscopy (SEM) cannot reveal the related information since an SEM microscopic image can only characterize the nanoparticles on surface and cannot offer information about the nanoparticles embedded inside the thin film, which are the catalytic centers. By contrast, Raman spectroscopy can provide more information of the embedded gold nanoparticles for elucidating the catalytic activity. Our recent progress will be presented.