



The Laboratory of Molten Salts and Electroanalytical Chemistry

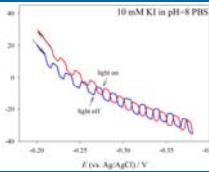
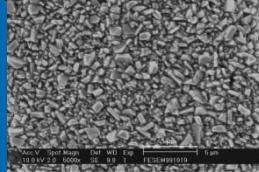
Po-Yu Chen Ph.D. and Professor

Department of Medicinal and Applied Chemistry

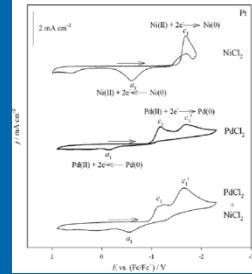
Kaohsiung Medical University

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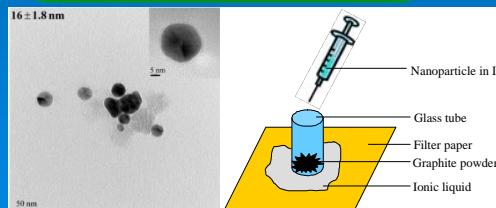


Electrodeposition of Metals and Alloys



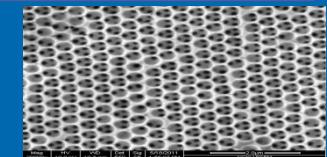
Electrodeposition of Semiconductors

Formation of NPs and Ionic Liquid-C Electrodes

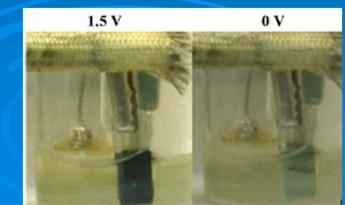


Ionic Liquids

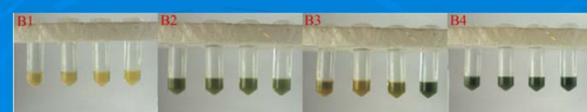
Electrodeposition of Macroporous Metals



Electrodeposition of Conducting Polymers



Extraction of Metal Ions

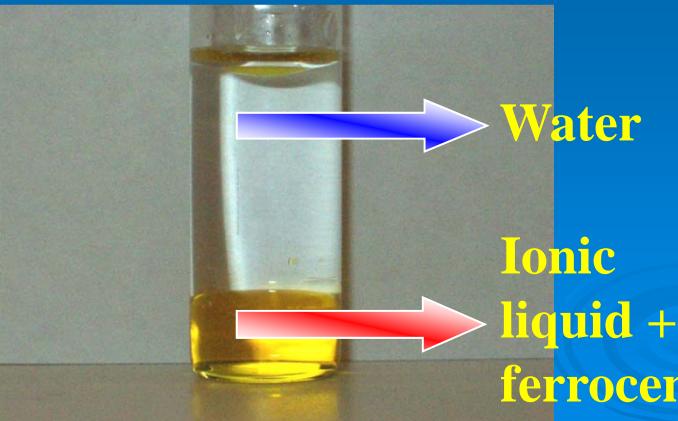
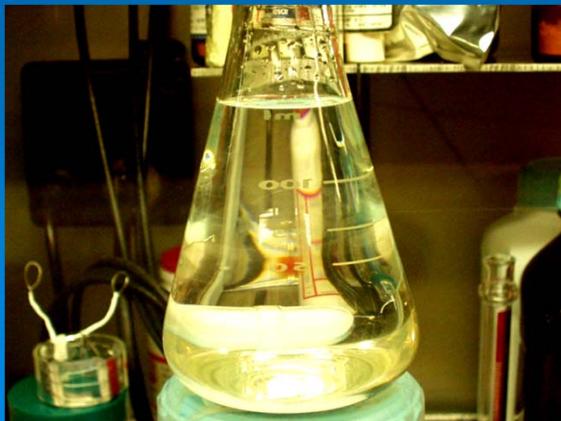
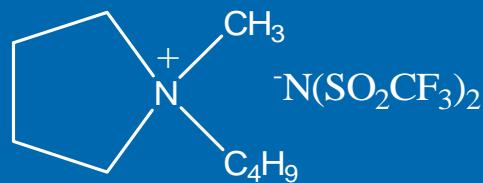




Ionic Liquids

Green Solvents

The Butylmethylpyrrolidinium
Bis((trifluoromethyl)sulfonyl)imide Ionic Liquid
(BuMePy⁺TFSI⁻)





Nonenzymatic Electrocatalysts Prepared by Electrodeposition from Ionic Liquids

Voltammetric behavior of Pd(II) and Ni(II) ions and electrodeposition of PdNi bimetal in *N*-butyl-*N*-methylpyrrolidinium dicyanamide ionic liquid

Hsin-Yi Huang, Po-Yu Chen*,¹

Department of Medicinal and Applied Chemistry, Kaohsiung Medical University, Kaohsiung City 807, Taiwan

For methanol oxidation

PdNi- and Pd-coated electrodes prepared by electrodeposition from ionic liquid for nonenzymatic electrochemical determination of ethanol and glucose in alkaline media

Hsin-Yi Huang, Po-Yu Chen*

Department of Medicinal and Applied Chemistry, Kaohsiung Medical University, Kaohsiung City 807, Taiwan

For ethanol and glucose oxidation

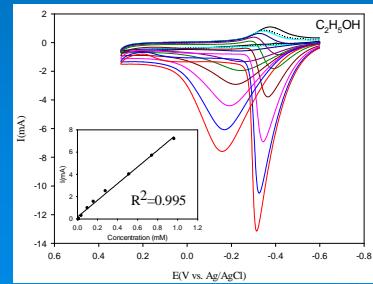
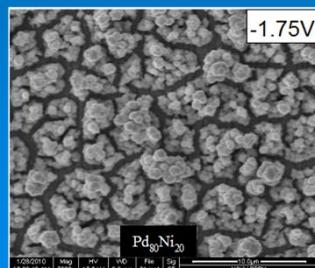
Electrochemical study of Pt and Fe and electrodeposition of PtFe alloys from air- and water-stable room temperature ionic liquids

Hsin-Yi Huang, Chung-Jui Su, Chai-Lin Kao, Po-Yu Chen*

For oxygen reduction

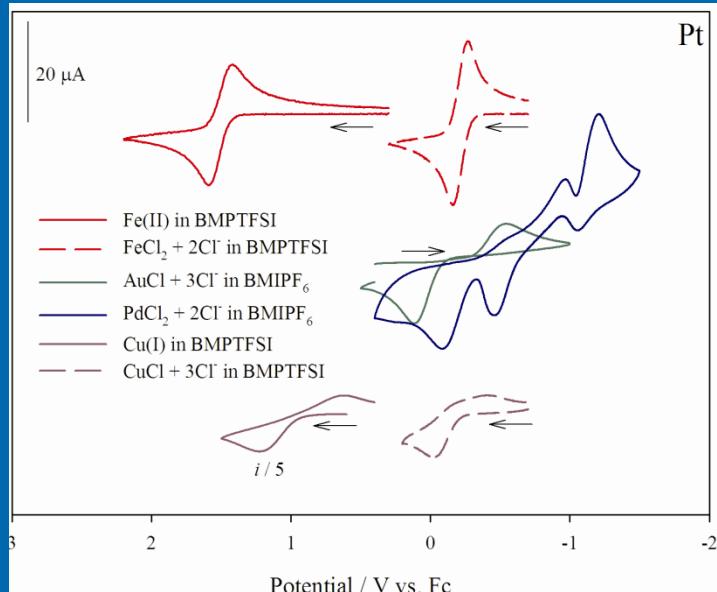
^a *Department of Medicinal and Applied Chemistry, Kaohsiung Medical University, Kaohsiung City 807, Taiwan*

^b *Center of Excellence for Environmental Medicine, Kaohsiung Medical University, Kaohsiung City 807, Taiwan*

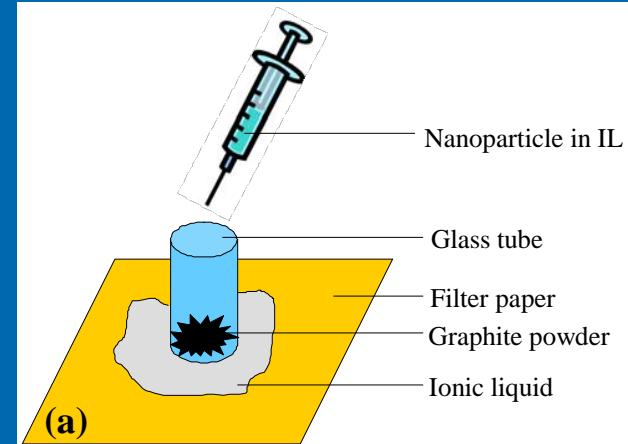




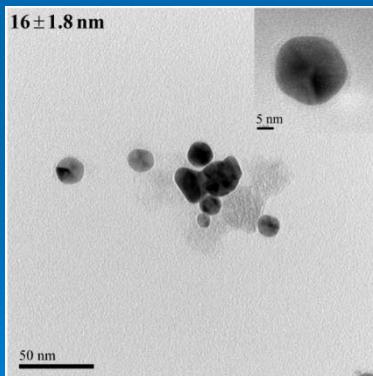
Formation of Metal and Alloy Nanoparticles in Ionic Liquids and the Electrochemical Applications



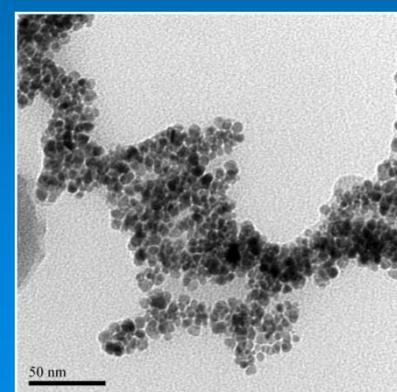
Significant
redox potential
change induced
by the change
of coordination
spheres



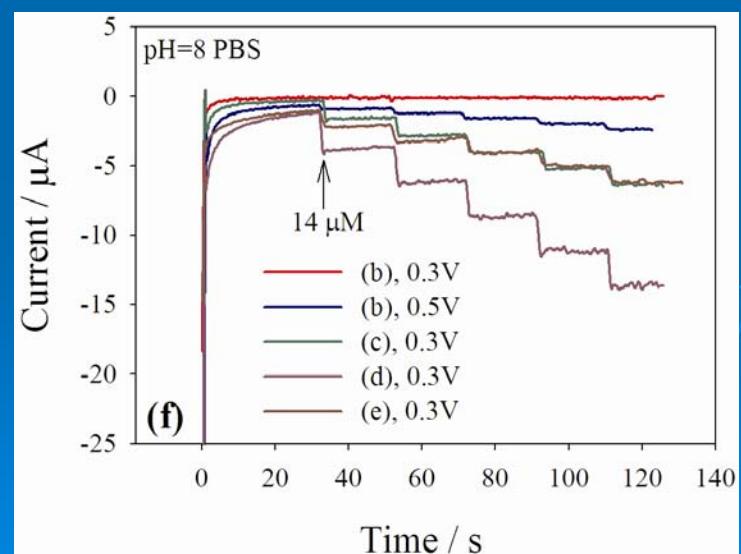
Ionic liquid-Nanoparticle-Graphite paste



Au nanoparticle



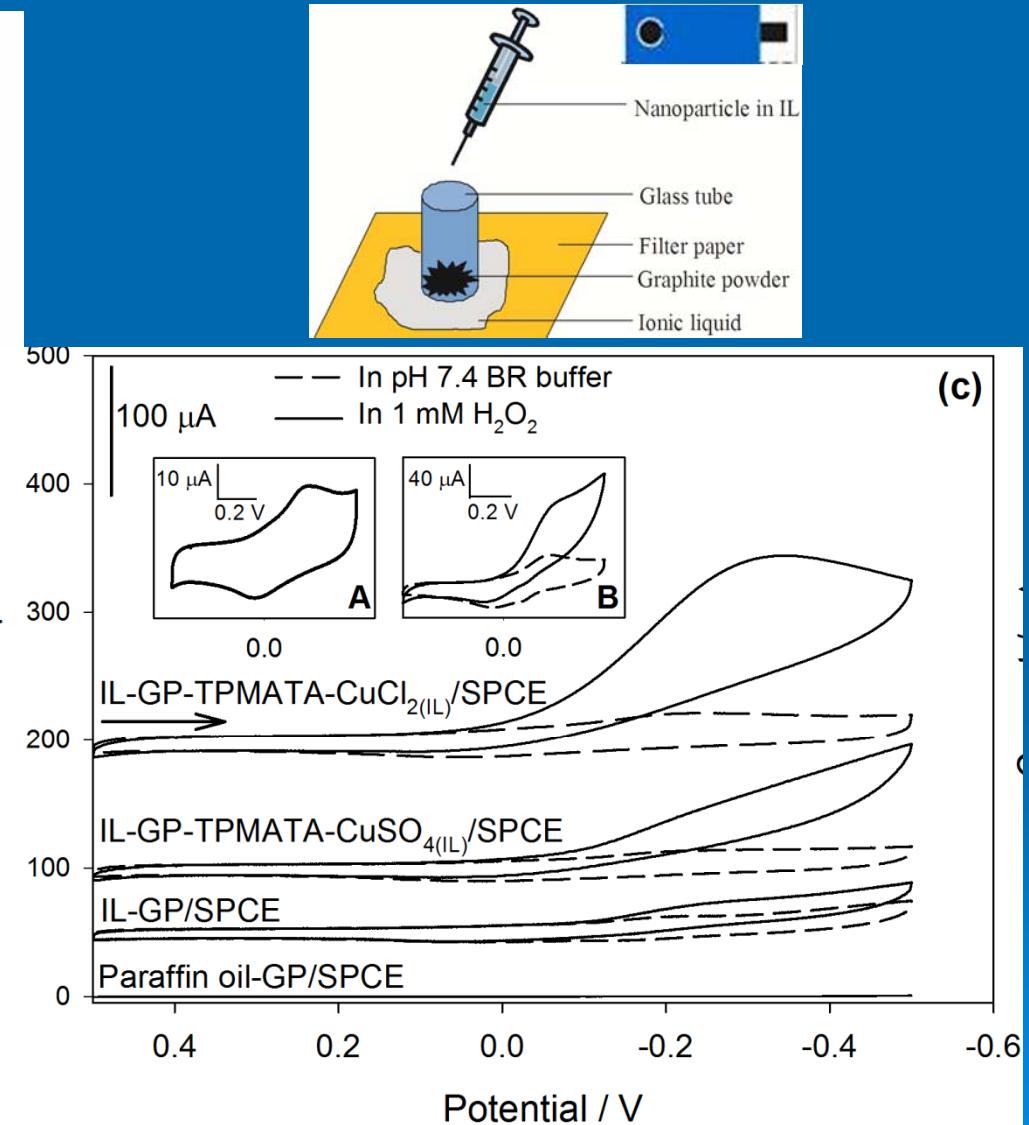
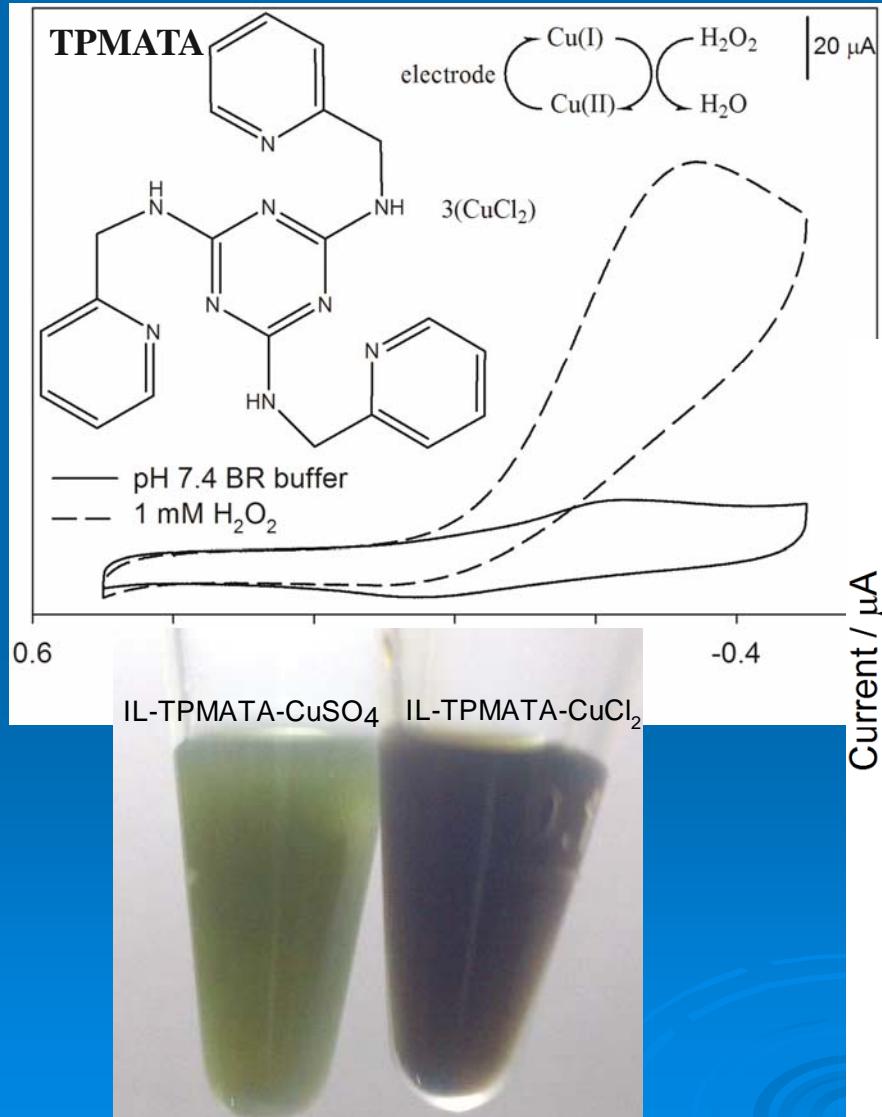
Pd nanoparticle



H_2O_2 detection

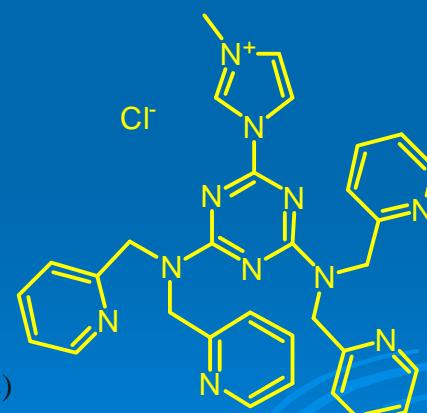
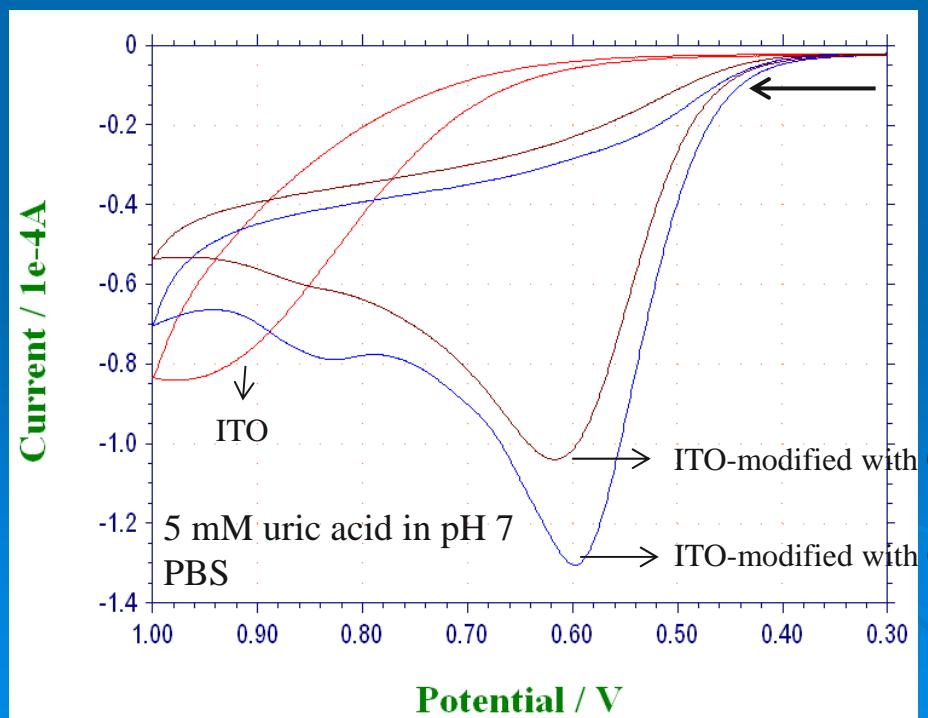
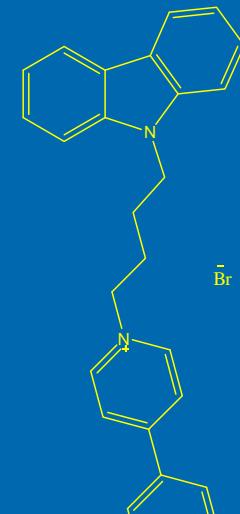
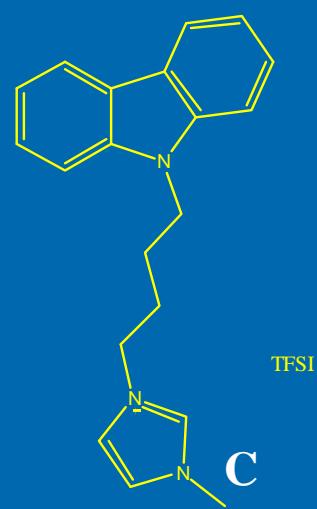
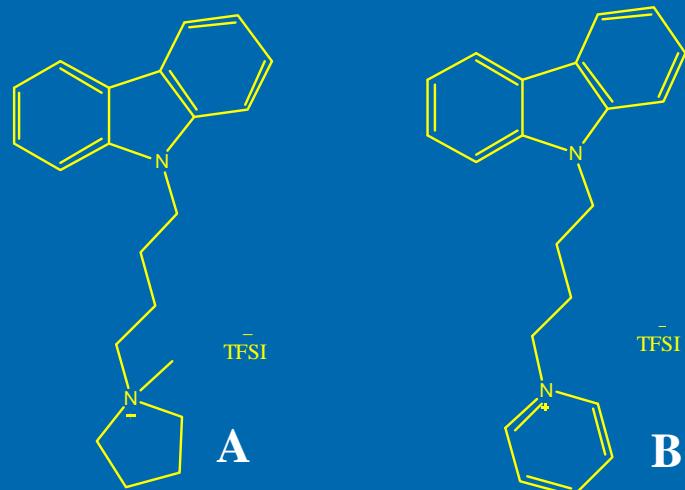


Ionic Liquid-Metal Complex-Graphite Composite Electrodes





Electropolymerized Ionic Liquid-Modified Electrodes

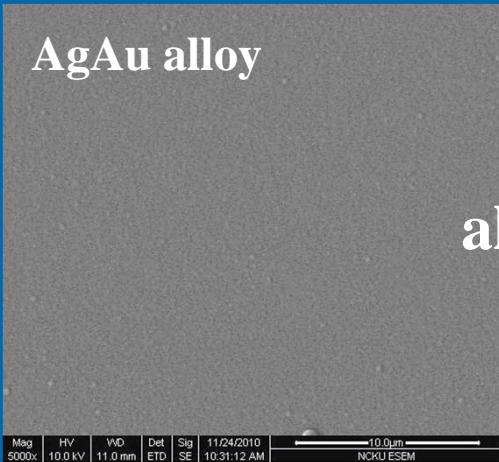


Ionic liquid was
electropolymerized on ITO by
cyclic voltammetry



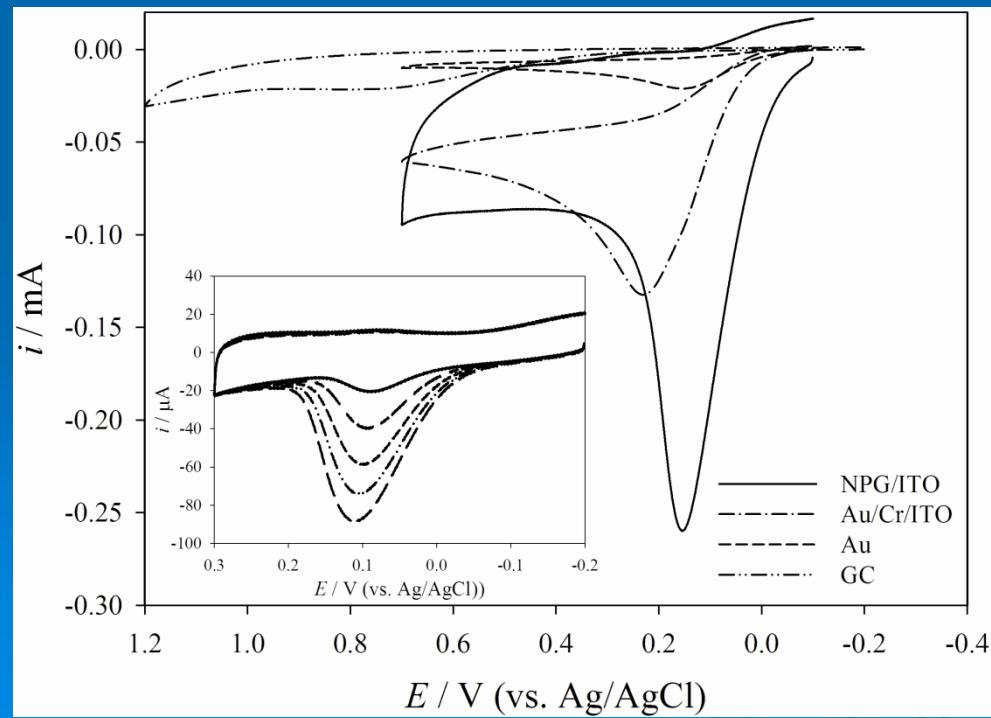
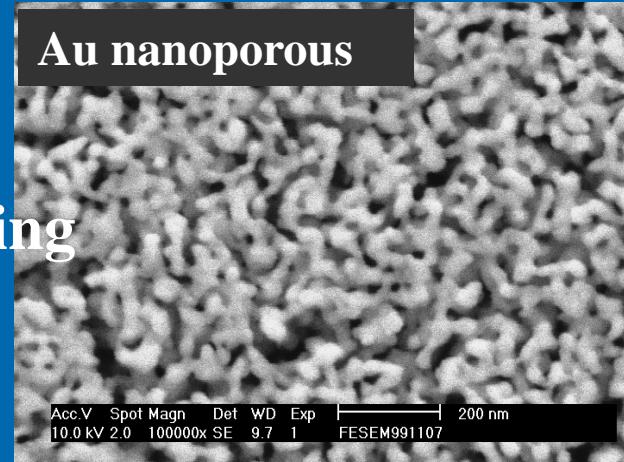
Nanoporous Electrodes

AgAu alloy



alloying \longleftrightarrow dealloying

Au nanoporous

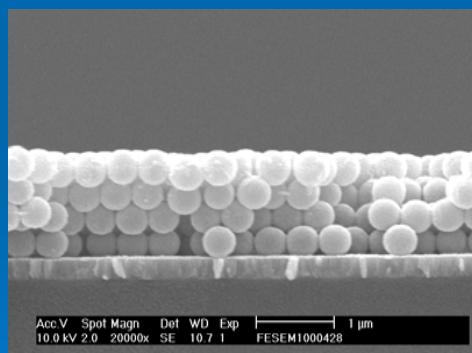
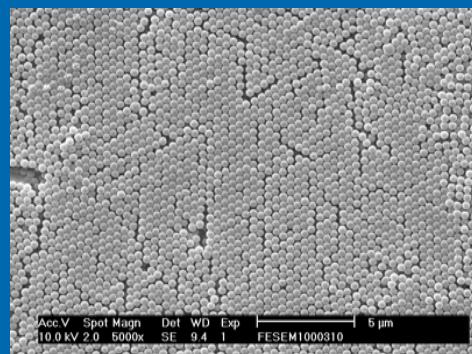


Detection of Hydrazine
Responses of different electrodes



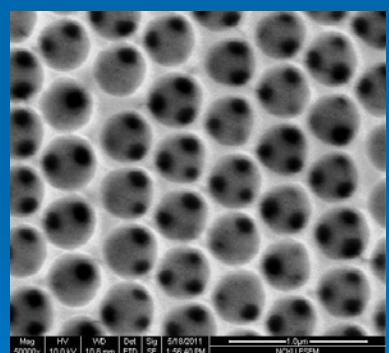
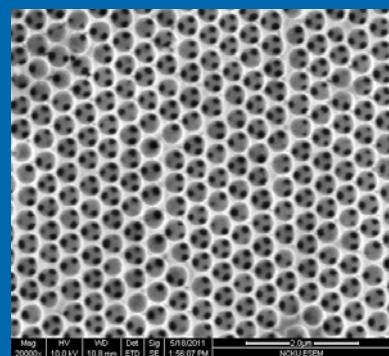
Preparation of Porous Electrodes Using PS Templates

Electrodeposition

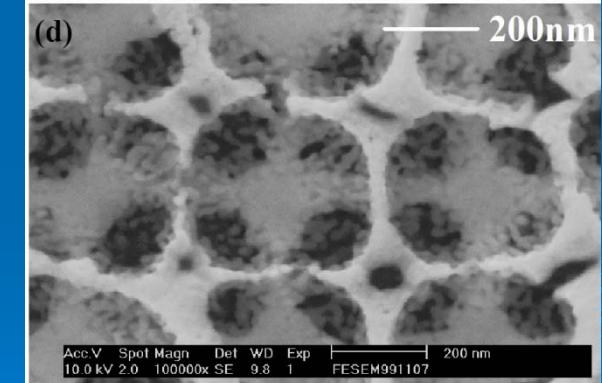
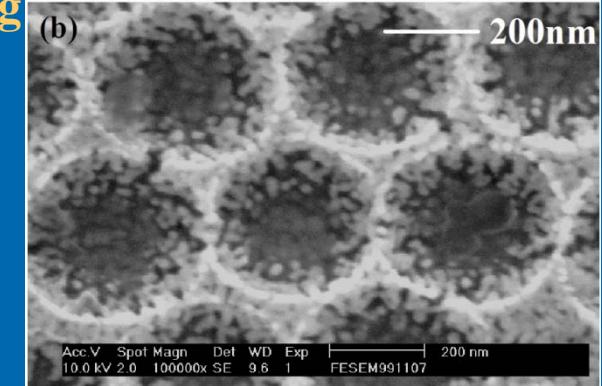


PS template

Acid etching



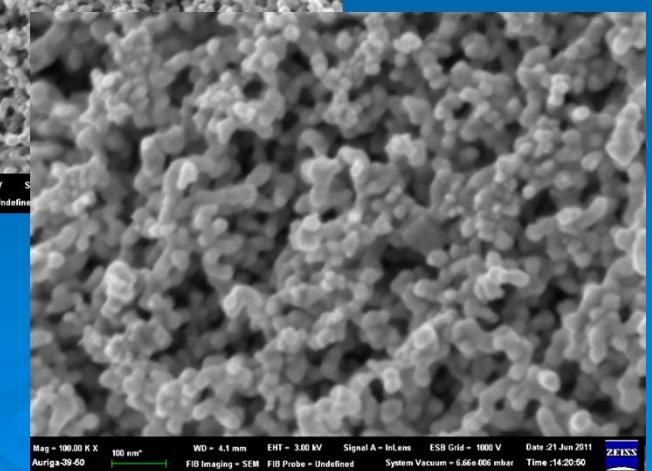
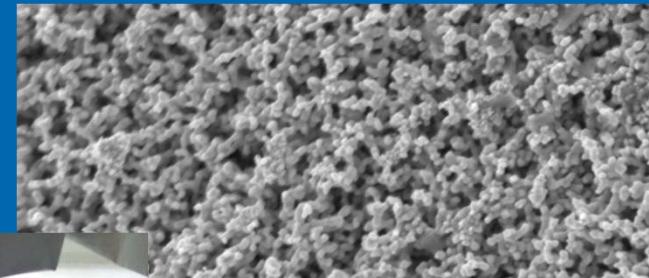
AgAu
macroporous



Au macropore-
nanopore

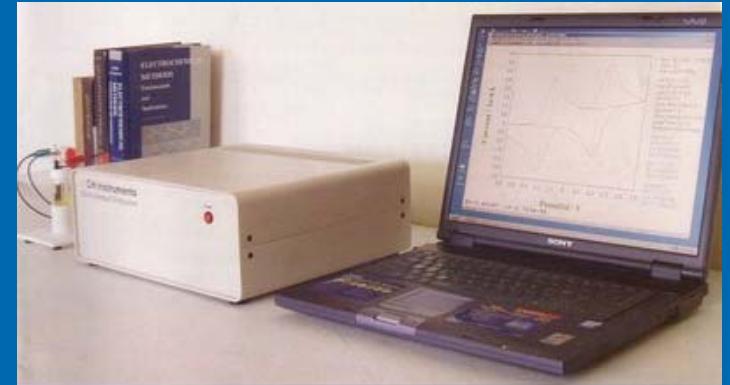


Nanoporous Electrode for Spectroelectrochemical Analysis





Potentiostat\Galva nostat



*Flow
Injection
Analysis*



*Rotating
Electrodes*

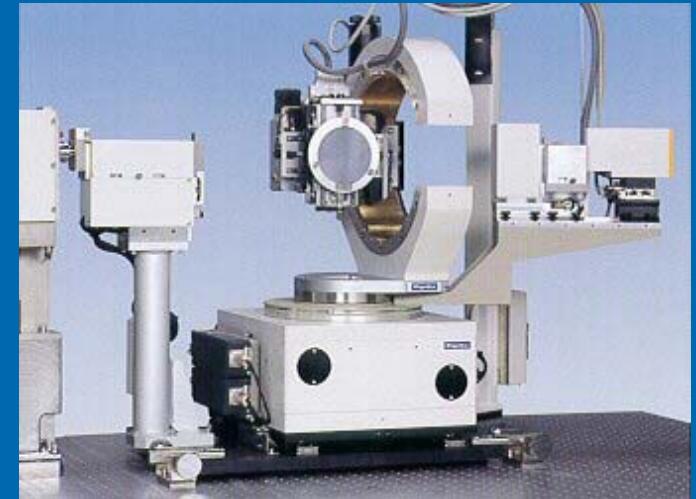




Field-Emission Scanning Electron Microscope



Transmission Electron Microscope



X-ray Diffractometer



X-ray Photon Electron Spectrometer