

Chen Huey-Ing (陳慧英 教授)

Professor



B.S.	Chemical Engineering, National Cheng Kung University, Taiwan	1979
M.S.	Chemical Engineering, National Cheng Kung University, Taiwan	1981
Ph.D.	Chemical Engineering, National Cheng Kung University, Taiwan	1994

Phone 886-6-2757575-62667

Email hueying@mail.ncku.edu.tw

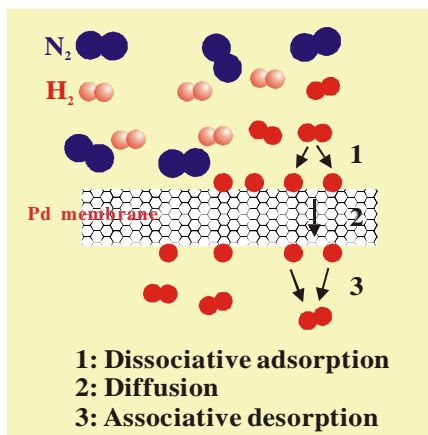
Office Room 93818, Chemical Engineering Building

Research Interests: →

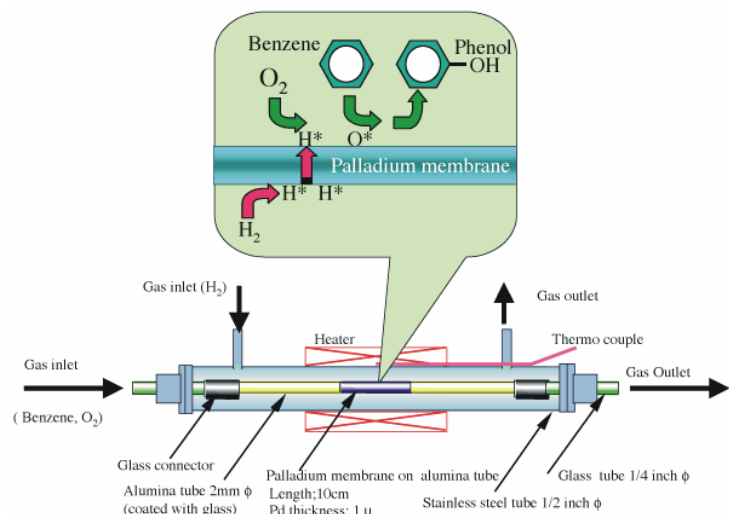
Inorganic Membranes Laboratory (93826R)

Synthesis and Application of Inorganic Membranes

Various inorganic Membranes including alumina, titania and Pd-based composite membranes have been developed for the uses of gas separation and purification in this laboratory. Currently, the research works are mainly focused on the preparation of hydrogen-permselective Pd alloy composite membranes. These membranes assembled into catalytic membrane reactors will be further studied for the application promises in chemical reactions, fuel cells, and environmental protection.



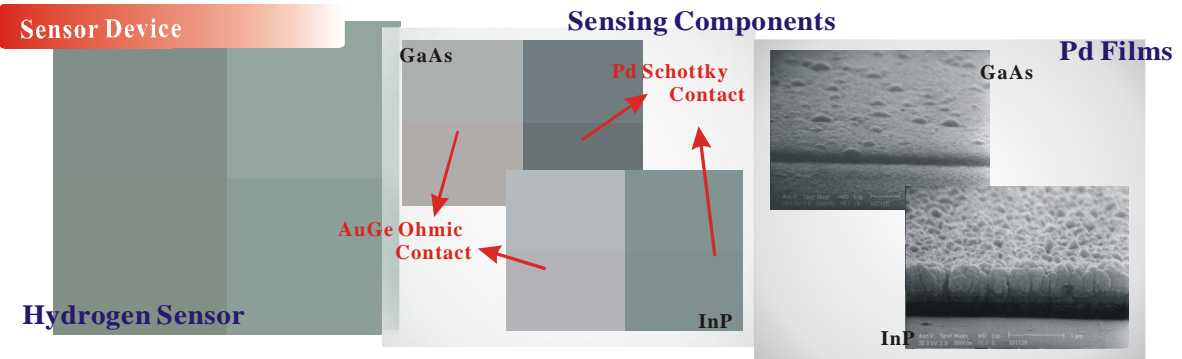
Theory for hydrogen permeate through Pd film



Scheme of membrane reactor

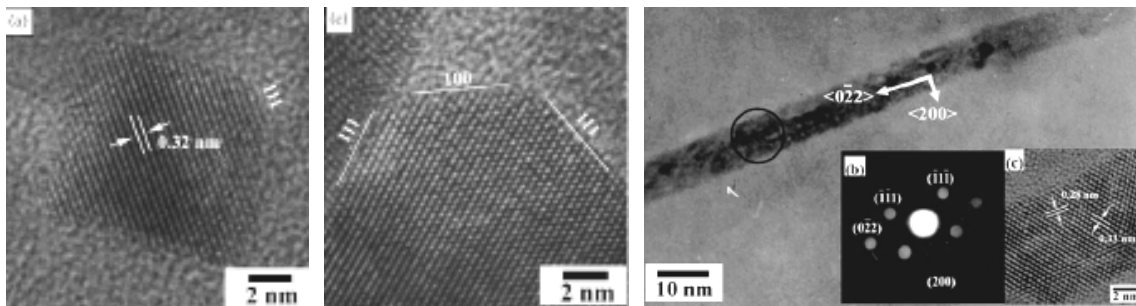
Fabrication of Hydrogen Sensors

On III-V compound semiconductor substrates, the Pd electroless plating integrating with micro-lithography are employed to fabricate Pd Schottky diodes as the high sensitive hydrogen sensors. To fabricate the sensor devices, the wetness deposition techniques such as electroless plating and electrophoretic deposition are adopted in this laboratory. Our devices demonstrate excellent hydrogen sensing performances with high sensitivity, wide detection range, and rapid response rate. The detection mechanisms are also investigated. In the future, versatile sensors will be developed and integrated as sensing arrays for multi-functional uses.

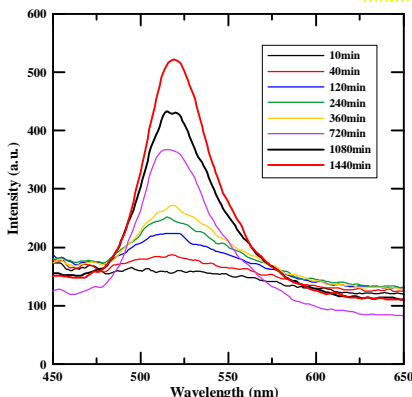


Preparation and Characterization of Nanoparticles

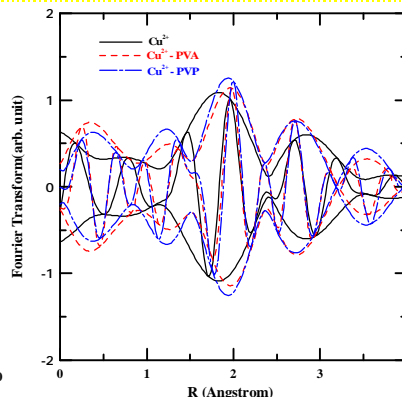
Various kinds of nanoparticles, such as metals (Ni, Cu, Ag, Pd, etc.), metal oxides (CeO_2 , Al_2O_3 , etc.) and semiconductors (CdSe , CdTe , etc.) have been successfully synthesized by chemical wetness route. Via modulating the shape, size, structure, and chemical composition, the prepared particles can be designed and synthesized for optics, electrics, and other versatile uses.



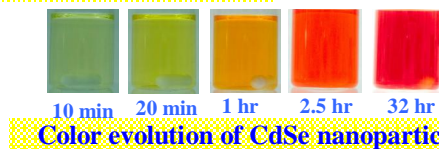
HRTEM images for CeO_2 nanoparticles with different shapes.



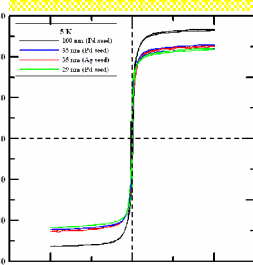
Enhancement of PL efficiency of CdSe nanoparticles.



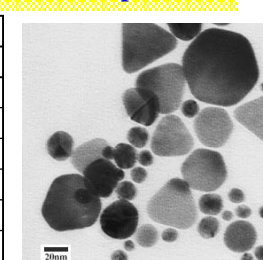
EXAFS results to probe the interaction between Cu-PVA.



Color evolution of CdSe nanoparticles.



Superparamagnetism of Ni nanoparticles.



Cu/Ag nanoparticles.