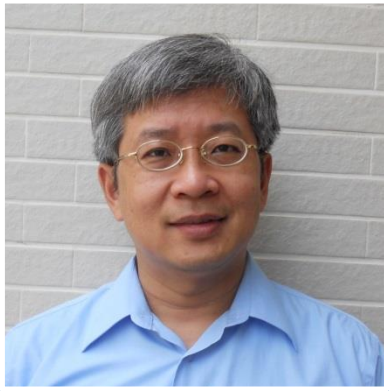


Prof. Bing-Hung CHEN (陳炳宏教授)

Ph.D.：Chemical Engineering, Rice University (1998)

Email：bkchen@mail.ncku.edu.tw

Phone：886-6-275-7575 ext. 62695

Research Interests

Dr. Chen obtained his BSc from Department of Chemical Engineering at National Taiwan University (1990) and his PhD in Chemical Engineering at Rice University (1998), with an emphasis in interfacial phenomena. Shortly after his postdoctoral fellowship in studying the critical phenomena of the colloid-polymer system, he joined the Department of Chemical Engineering at National University of Singapore as an assistant professor in 1999. In 2002, he moved back to National Cheng Kung University.

Dr. Chen's research interests are mainly on the interfacial phenomena and engineering, as well as the catalysis and catalytic reaction engineering. More specifically, Dr. Chen's group currently works on extraction of plant essence with surfactants, synthesis of zeolitic materials and other catalysts, and their applications in catalyzed hydrolysis of chemical hydrides for hydrogen storage and production as well as catalyzed transesterification of vegetable oils for biodiesel production. In the near future, Dr. Chen's group will also focus the catalyzed conversion of biomass to chemicals and transportation fuel.

Representative Publications

(1) D. Carr, P.R. Garrett, D. Giles, G. Pierre-Louis, E. Staples, C. A. Miller, **B-H Chen**, Solubilization of Triolein by Microemulsions Containing $C_{12}E_4$/Hexadecane/Water: Equilibrium and Dynamics, *Journal of Colloid and Interface Science*, 325(2), 508–515 (2008).

(2) J.–L. Li, D. Bai, **B.–H. Chen**, Effects of Additives on the Cloud Points of Selected Nonionic Linear Ethoxylated Alcohol Surfactants, *Colloids and Surfaces A*, 346, 237–243 (2009).

(3) C.–H. Liu, **B.–H. Chen**, C.–L. Hsueh, J.–R. Ku, M.–S. Jeng, F. H. Tsau, Hydrogen generation from hydrolysis of sodium borohydride using Ni-Ru nanocomposite as catalysts, Int. J. of Hydrogen Energy, 34(5), 2153–2163 (2009)

(4) J.-T. Lo, **B.-H. Chen**, T.-M. Lee, J. Han, J.-L. Li, Self-Emulsifying O/W Formulations of Paclitaxel Prepared from Mixed Nonionic Surfactants, *J. Pharm. Sci.*, 99(5), 2320–2332 (2010)

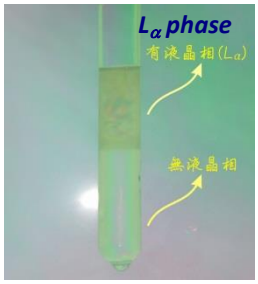
(5) C.–C. Chou, D.–J. Lee, **B.–H. Chen**, Hydrogen production from hydrolysis of ammonia borane with limited water supply, Int. J. of Hydrogen Energy, 37(20), 15681–15690 (2012)

(6) Y.-Y. Wang, Tấn Hiệp Đặng, **B.-H. Chen**, D.-J. Lee, Transesterification of Triolein to Biodiesel Using Sodium-loaded Catalysts Prepared from Zeolites, Industrial & Engineering Chemistry Research, 51(30), 9959–9965 (2012)

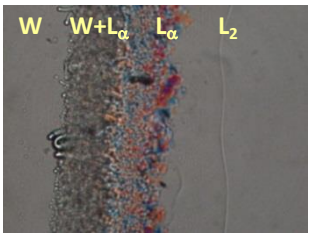
(7) Tấn Hiệp Đặng, **B.-H. Chen**, Optimization in Esterification of Palmitic Acid with Excess Methanol by Solid Acid Catalyst, Fuel Processing Technology, 109, 7–12 (2013).

(8) Tấn Hiệp Đặng, **B.-H. Chen**, D.-J. Lee, Application of Kaolin-based Catalysts in Biodiesel Production via Transesterification of Vegetable oils in Excess Methanol, Bioresource Technology, 145, 175–181 (2013)

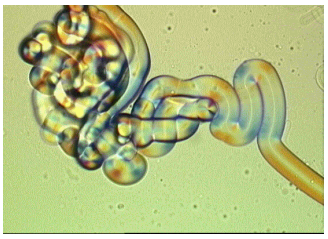
Interfacial Phenomena and Engineering - Phase Behavior of Surfactants

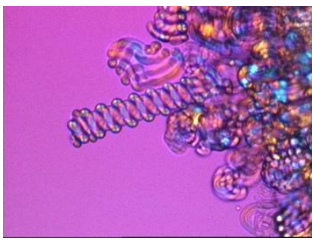


Typical Aqueous Phase Sequence of Surfactant

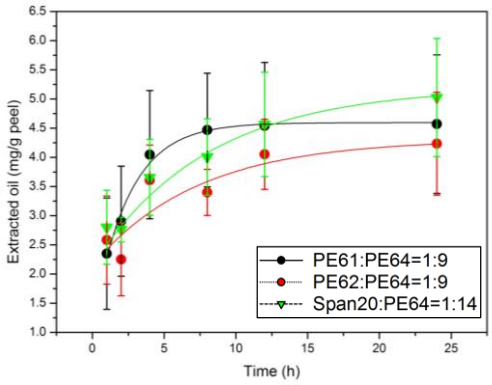


Liquid Crystalline L_α Phase (Myelins)

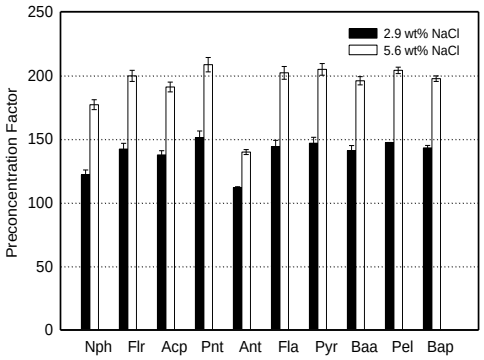




➢ *Application in Preconcentration, Extraction and Solubilization Processes*



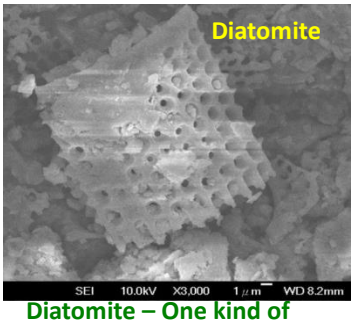
Extraction of lemon oils from lemon peel with microemulsion prepared from mixed nonionic surfactants



Performance of the L_3-phase extraction on trace hydrophobic solutes such as polycyclic aromatic hydrocarbons (PAHs).

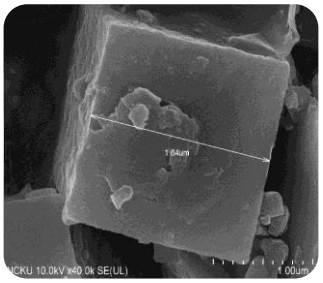
Catalysis and Catalytic Reactions

➢ *Synthesis of Zeolites and Zeolitic Materials from Siliceous Clays*



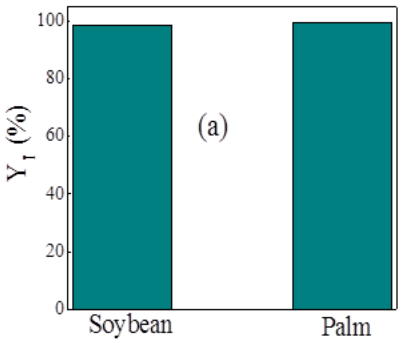
Diatomite – One kind of common siliceous clay

Zeolite CAN prepared from diatomite



Zeolite LTA prepared from kaolin (another kind of siliceous clay)

➢ Catalysts for Renewable Energy Production



Conversion yield of vegetable oils to biodiesel in presence of *as*-prepared zeolite catalysts.

Biodiesel made from catalyzed transesterification of soybean oil in methanol over zeolite catalysts

A cellular phone recharged from a 2W PEMFC powered by H_2 produced from catalyzed hydrolysis of $NaBH_4$ over light-weighted Co catalyst