



***Professor Gouq-Jen Su and Mrs. Shou-Tsung (Qiao) Su
(1908 - 1996 and 1913 - 2009)***

Professor Gouq-Jen Su lived a long and productive life, dedicated to the pursuit of ideas and ideals. He was born in 1908 in Fukien, a coastal province in the southern region of China and, as a teenager, attended a Northern Baptist missionary school. In 1931, at the age of 23, Professor Su graduated from Tsing Hua University in Peking. In 1934, Gouq-Jen Su was nationally selected to further his study in the United States. That summer, he journeyed to MIT and, in three years, received his D.Sc. Degree.

During WWII, Dr. Su served for four years as the chairman of the Chemical Engineering Department at Tsing Hua University. He helped design and operate an alcohol fermentation plant and sugar refinery in Kunming, Yunnan Province. The alcohol produced was mixed with gasoline and was utilized as fuel for U.S. Army motor vehicles traveling on the Burma Road, some forty years ahead of gasohol.

Professor Su joined our faculty at the University of Rochester in 1947 and retired in 1974, though continuing as Emeritus for the remainder of his life. Over his fifty-year career, Professor Su supervised 33 master and 15 doctoral students. Among his numerous publications, his outstanding papers on applied thermodynamics have been widely cited and are considered landmarks in the field. He proposed a modified form of the van der Waals Law of Corresponding States. Every thermodynamic textbook, to this day, contains his generalized equations of state for real gases.

Shou-Tsung Su grew up and was schooled in a family complex which is now a National Museum and was the location for the movie "Raise the Red Lantern". She left home to attend Nankai High School in Tianjin and was one of a handful of women to graduate from the prestigious Tsing Hua University, where she majored in chemistry and met Gouq-Jen Su. Shou-Tsung was an award-winning painter of Chinese watercolors, loved gardening, cooking elaborate Chinese banquets, and co-authored a Chinese cookbook.

With the establishment of the Su Conference Room and the annual Su Distinguished Lectureship, The University of Rochester joins the Su family in honoring the long and distinguished career of Professor Gouq-Jen Su and the creative passion of Mrs. Shou-Tsung Su.



HAJIM SCHOOL OF ENGINEERING & APPLIED SCIENCES
UNIVERSITY of ROCHESTER

The Department of Chemical Engineering

Presents

The 10th Annual G.J. and S.T. Su Distinguished Lectureship

April 25, 2012

2:15 p.m.

101 Goergen Hall

Refreshments served at 1:45 p.m.

Professor James C. Liao

Ralph M. Parsons Foundation Chair
and Chancellor's Professor

Department of Chemical and
Biomolecular Engineering,

University of California, Los Angeles



A Tale of Two Butanols:
Exploring Metabolism for
Fuels and Chemicals

Four-carbon alcohols (n-butanol and isobutanol) have recently attracted significant attention, both because of their desirable fuel properties and their roles as chemical feedstock. n-Butanol was produced in large scales by *Clostridium* species; isobutanol was detected as a minor product in wine fermentation. To produce large quantities efficiently to serve as next-generation fuels and chemical feedstock, multiple intrinsic and extrinsic challenges exist for metabolic engineers. n-Butanol is an end-product of catabolism; isobutanol is an off-tract product of anabolism. There are thermodynamically unfavorable reactions in the n-butanol pathway; there are natural driving forces in the isobutanol pathway. There are sugars, cellulose, protein, and carbon dioxide as carbon sources; there are sunlight, electricity, and hydrogen to power the reactions. There are enzymes sensitive to oxygen; there are reactions lacking proper reducing partners. In both pathways the products are more toxic than the cells can tolerate. Yet, we managed to overcome these difficulties and used the two compounds as springboards to explore various possibilities in the energy space.