

## Introduction to Yuanhui Zhang

Yuanhui Zhang, is a Professor and the Division Leader of Bioenvironmental Engineering, and the Associate Head of Department of Agricultural and Biological Engineering. He is also a professor of Departments of Mechanical Science Engineering, Civil and Environmental Engineering, and Bioengineering, at the University of Illinois at Urbana-Champaign. He is a registered professional engineer; a Fellow of American Society of Heating, Refrigeration and Air-Conditioning Engineers (ASHRAE); the winner of 2008 Henry-Geise Award from American Society of Agricultural and Biological Engineers, and 2009 Best Thesis Advisor of Air and Waste Management Association. His research areas include thermochemical conversion of biowaste and algae into crude oil, indoor air quality engineering and volumetric particle tracking velocimetry. He published over 240 scientific papers and is the Author of a Textbook “Indoor Air Quality Engineering”. Aside from his scientific publications, Professor Zhang’s work has been widely reported by U.S. media including Fox, CNN, NBC, New York Times and National Geographic.



## Presentation: Environment-Enhancing Energy – Third Generation Biofuel

**Abstract:** Energy, environment and economic development are among the greatest challenges in 21<sup>st</sup> century, especially for densely populated countries such as China. How to continue improving our living conditions with limited energy sources? How to protect our environment by reducing carbon emissions, and preserving our water resources? How can we handle the magnitude and the multitude of these challenges? Are you optimistic, or pessimistic, about our future? In this presentation, the author offers his perspectives, based on his own research, on the issues of energy and environment, and their implications to our economic development and sustainability. His propose and conducts research in Environment-Enhancing Energy.

Biowaste and algae are the only abundant resources have the potential to ultimately replace petroleum. E<sup>2</sup>-Energy first converts organic solids in animal, human and food wastes into biocrude oil via a hydrothermal Liquefaction (HTL); Then grows fast-growing algae in the HTL wastewaters and sequester carbon dioxide from the atmosphere; Finally, the algae biomass is fed back to the HTL, as a sole feedstock or as an additive, to be converted into additional biocrude oil. In this way, crude oil is re-generated, and at the same time, carbon is captured and wastewater is cleaned and reused.