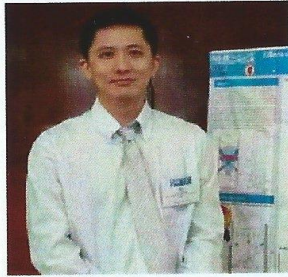


Bo Zhang **Department of Mechanical and Industrial Engineering**

NCE Outstanding Graduate Student Award



Bo Zhang joined the department in 2012 and has been working on his doctoral research under the guidance of Dr. Chao Zhu. His primary research is focused on understanding how coughing produces aerosols that could contain viruses and other pathogens and also how the droplets in the aerosol are transported in closed spaces. In this age of globalization and widespread air travel, this is an important problem, as evidenced by the extensive coverage the SARS and flu pandemics received in the past few years.

To better understand how these viruses move from person to person, Bo has developed a novel coughing simulator and a breath simulator to understand how aerosol droplets are generated in one person when they cough and then how they are deposited in another person when they breathe. His research on this topic is funded by Boeing, as the transmission of diseases from one traveler to another is something the company is keenly interested in understanding. While most prior work focused on the biological aspects of this problem, Bo has brought a rigorous engineering understanding to the problem using both experiments and computational simulations. Using his work, he can predict how airborne pathogens move inside an enclosed area such as an aircraft cabin. This work will help to mitigate the transfer of these dangerous infections. He has received two awards for his coughing simulator design and this research thus far has produced one paper that is under review and three more that are under preparation.

In addition to his primary dissertation research, Bo has been involved in a number of research projects. His work on modeling and experiments of fluid catalytic cracking riser reactor has resulted in the publication of two journal and numerous conference papers. This work was supported by Exxon. Additionally, Bo has conducted research on controlled condensation to induce depressurization; this work has resulted in one journal paper and a conference paper. He has mentored and worked with four master's students. He is also currently working with Dr. Lee on gas diffusion layers applied to fuel cells.