

**The Department of
Mechanical Engineering**

PRESENTS

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**Friday, April 27, 2018
WCH Room 205/206
11:10-12:00PM**

***Respiratory Aerosol Dynamics with Applications to Pharmaceutical Drug Delivery
and Lung Tumor Diagnosis***

Abstract:

Determining the detailed dynamics of inhaled particles in the human respiratory system is crucial in assessing inhalation toxicology and optimizing inhalation drug delivery. In this talk, a brief introduction of respiratory research will be given, and technical challenges and potential benefits will be presented.

I will then talk in details about our recent work in direct nose-to-brain drug delivery and lung tumor diagnosis using exhaled aerosols. The later holds the promise of early detection of lung cancers. Our goal is to develop an expert-diagnosis system which takes in a breath test sample and predicts whether a patient has a lung disease, how severe it is, where it is located, and therefore provides the optimal treatment protocol with targeted drug delivery.

Applications of new techniques in respiratory modeling will be discussed, such as electro-magnetic guidance, machine learning, and statistical shape modeling.

About the Speaker:

Dr. Jinxiang Xi is an Associate Professor of Mechanical Engineering and of Biomedical Engineering at California Baptist University. He obtained his Ph.D. in Mechanical Engineering from Texas A&M University in 2005 in thermal-fluid sciences. Before joining Cal Baptist, he has worked as an Assistant Professor at the University of Arkansas and Central Michigan University.

Dr Xi. has sixteen years' research experience in biomedical devices and pharmaceutical research. His research in respiratory aerosol dynamics is highly interdisciplinary, which bridges biology, medicine, and engineering. Applications include inhalation toxicology, aerosol-based tumor diagnosis, and personalized drug delivery. To date, Dr. Xi has published 60 peer-reviewed journal papers (45 first-authored, h-index =17), seven book chapters, and one US patent. Dr. Xi won the 2012 Monaghan-Trudell Award from American Respiratory Care Foundation for his contributions to "Aerosol Technology Development".

