

**Department of Structural Engineering  
University of California, San Diego  
SE 290 & Computational Mechanics Special Seminar**



Professor Chung-Hao Lee  
Department of Aerospace and Mechanical Engineering  
University of Oklahoma

**"Towards Biomechanical Simulation-Guided Diagnosis and Treatment of Valvular Heart Disease"**

Wednesday, January 23, 2019

1:00 pm - 1:50 pm, Cognitive Sciences Building, Room 001

**Abstract**

Functional tricuspid regurgitation (FTR) affects about 1.6 million Americans, with only 8,000 treated surgically each year. Increasing evidence has showed that FTR typically does not regress after successful left-sided valve surgery, and the untreated FTR frequently further worsens the long-term prognosis. The long-term objective of my research program is to provide reliable and objective guidance at the pre-operative diagnosis stage, based on predictive computer simulations, for timely treatment of patients with functional tricuspid regurgitation for selection of novel individualized therapeutic strategies. In this talk, several techniques to investigate key biomechanical responses of the functioning heart valves will be presented, from both the computational modeling and experimental perspectives. The findings and results from this research will provide a scientific foundation for facilitating innovative surgery simulations for designing optimal therapeutics, which best restores the TV geometry and functionality.

**Biography**

Dr. Chung-Hao Lee is an assistant professor of Aerospace and Mechanical Engineering in the Gallogly College of Engineering at the University of Oklahoma (OU), with his research centered around soft tissue biomechanics and biomaterials design (<http://ou.edu/coe/ame/bbdl/>). Dr. Lee graduated with a bachelor's and master's degrees in Civil Engineering from National Taiwan University in 2003 and 2005, respectively, and he received a Ph.D. in Civil Engineering (major in structural & computational mechanics) from UCLA in 2011. Before he joined OU in Fall 2016, Dr. Lee has been an ICES/AHA postdoctoral fellow in the Institute for Computational Engineering and Sciences at the University of Texas at Austin since 2012. He published over 20 journal papers and 3 book chapters, and he is the recipient of the American Heart Association Scientist Development Grant (2016-2020) and the OU Nancy L. Mergler Faculty Mentor Award for Undergraduate Research (2018).

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*Sponsored by Professor J.S. Chen  
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