

A School of Engineering Seminar San Francisco State University

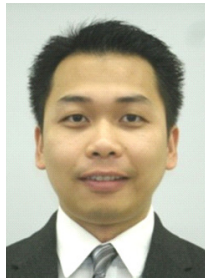
Increase Resilience in Civil Structures Using Smart Materials and Structures



SF STATE

Zhaoshuo Jiang,
PE, PhD

Structural Engineer
Skidmore, Owings & Merrill LLP



May 6, 2013
Monday

1.10-2pm

SCI 256

Synopsis:

Smart materials and structures received a lot attention lately. In this talk, a smart controllable damping device, magneto-rheological (MR) fluid damper will be first introduced. To fully utilize the unique characteristics of the MR damper, an accurate model is required for use in control design and analysis that fully incorporated the controllable nature of such device. A high fidelity fully-dynamic MR damper model is developed and will be presented. With the use of MR dampers, an innovative symbiotic system combining structural control and structural health monitoring is proposed. Besides the intrinsic and independent benefits of each individual system, the integrated system can act together and provide mutual aid for each other. The idea has been recognized with a 2nd prize in the 2010 National Security Innovation Competition. In addition, the real-world practice of implementing smart structures in Skidmore, Owings & Merrill LLP (SOM) will be demonstrated and discussed.

Speaker Bio:

Zhaoshuo Jiang is a structural engineer professional in the San Francisco office of Skidmore, Owings & Merrill LLP (SOM). He received his M.S. and Ph.D. from the University of Connecticut and moved to San Francisco to continue his professional practice. During his graduate study, he has been actively involved in several research and educational projects with particular emphasis on using smart materials and structures to increase resilience in civil structures. After joining SOM, he applies his expertise and continues conducting researches on topics such as superiority of different structure systems and structural optimization, besides performing analyses and design on high-rise buildings.