

# A School of Engineering Seminar

## Increasing Resilience in Civil Infrastructure Using Smart Structures Technologies



SF STATE

**Dr. Zhaoshuo Jiang,**

Ph.D., P.E.



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TH 335**

### **Synopsis:**

Natural hazards can cause severe damage to civil structures. Smart structure technologies have demonstrated great potential in increasing the safety and reliability of civil structures. In this talk, a brief overview of smart structures technologies in both structural control and monitoring that the speaker has applied to civil engineering infrastructure to reduce response and to improve condition assessment toward enhanced resilience will be described. Specifically, a promising semi-active damping device, the magneto-rheological (MR) fluid damper, and its high fidelity numerical model will first be introduced. Next, a new method for real-time hybrid simulation (RTHS), an innovative method of experimental testing, is introduced to resolve the size and complexity limitation of the numerical component inherent to RTHS, which later on is used to experimentally verify the performance of structures equipped with smart control devices. In addition, the speaker will share some exciting future research ideas gained from combining his background in smart structures research with his practical industrial experience at SOM.

### **Speaker Bio:**

Dr. Zhaoshuo Jiang, P.E. 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 continued his professional practice in SOM. During his graduate study, he was actively involved in several research and educational projects with particular emphasis on using smart structures technologies to increase the sustainability and resilience of civil infrastructure. After joining SOM, he has conducted research on topics such as superiority of different structure systems and structural optimization, besides performing analyses and design on various types of high-rise buildings.

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