



KISHOR C. MEHTA



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Spring 2019 Khan Distinguished Lecture Series

The Fazlur Rahman Khan Distinguished Lecture Series honors Dr. Fazlur Rahman Khan's legacy of excellence in structural engineering and architecture

Initiated and Organized by PROFESSOR DAN M. FRANGOPOL

The Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture
Department of Civil and Environmental Engineering, ATLSS Engineering Research Center,
Lehigh University

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KISHOR C. MEHTA

P. W. Horn Professor of Civil, Environmental and Construction Engineering,
Texas Tech University. Lubbox, TX

“Evolution of Assessment of Wind Speeds in Tornadoes”

Friday, February 22, 2019 – 4:30 pm

Location: Whitaker Lab 303, Lehigh University, 5 E. Packer Avenue, Bethlehem, PA

<http://www.lehigh.edu/frkseries>

In step with the abounding vitality of the time, structural engineer **Fazlur Rahman Khan** (1929-1982) ushered in a renaissance in skyscraper construction during the second half of the 20th century. Fazlur Khan was a pragmatic visionary: the series of progressive ideas that he brought forth for efficient high-rise construction in the 1960s and '70s were validated in his own work, notably his efficient designs for Chicago's 100-story John Hancock Center and 110-story Sears Tower -- the tallest building in the United States since its completion in 1974.



Fazlur Rahman Khan

Lehigh endowed a chair in structural engineering and architecture and has established this lecture series in Khan's honor. It is organized by **Professor Dan M. Frangopol**, the university's first holder of the Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture, and sponsored by the Departments of Civil & Environmental Engineering, and Art, Architecture & Design.

Dr. Kishor Mehta is P.W.Horn Professor of Civil, Environmental and Construction Engineering at Texas Tech University. He was Program Director for the Structural and Architectural Engineering and Co-Program Director for the Engineering for Natural Hazards at the National Science Foundation in Washington, DC, during 2011-2015. He received B.S. and M.S. degrees in Civil Engineering from the University of Michigan and Ph.D. in Structural Engineering from the University of Texas-Austin. He is former Director of the Wind Science and Engineering Research Center (now the National Wind Institute) at Texas Tech. He was elected to the Distinguished Membership of the American Society of Civil Engineers in 2002 and to the National Academy of Engineers (USA) in 2004. He has been pursuing research in wind loads on buildings and structures since 1970. He chaired the committee of the American Society of Civil Engineers during 1976-1995 which produced the ASCE 7 wind load standards. He was Principal in developing EF-scale to assess intensity of tornadoes; NWS implemented the use of the scale in 2007. At Texas Tech he developed an interdisciplinary doctoral degree program in Wind Science and Engineering with NSF funding. This one-of-a-kind program has graduated 30 students with Ph.D.s to date. He has more than 170 publications to his credit.

Evolution of Assessment of Wind Speeds in Tornadoes. Tornadoes are windstorms that are unpredictable and short lived. As a result it is difficult to put wind measuring instruments in the path of a tornado. Wind speeds in tornadoes are assessed with indirect methods of physical evidence of damage or with remote sensing. This presentation discusses evolution of assessment of wind speed in tornadoes since 1970. In particular, it traces engineering based estimated (calculated where possible) wind speeds from damage, the development of F-scale by Dr. Ted Fujita in 1970 and its enhancement into EF-scale in this millennium. The presentation also describes current efforts to improve EF-scale and current/future efforts in remote sensing procedures using radars.

FAZLUR RAHMAN KHAN (1929 - 1982) One of the foremost structural engineers of the 20th century, Fazlur Khan epitomized both structural engineering achievement and creative collaborative effort between architect and engineer. Only when architectural design is grounded in structural realities, he believed — thus celebrating architecture's nature as a constructive art, rooted in the earth — can "the resulting aesthetics ... have a transcendental value and quality." His ideas for these sky-scraping towers offered more than economic construction and iconic architectural images; they gave people the opportunity to work and live "in the sky." Hancock Center residents thrive on the wide expanse of sky and lake before them, the stunning quiet in the heart of the city, and the intimacy with nature at such heights: the rising sun, the moon and stars, the migrating flocks of birds. Fazlur Khan was always clear about the purpose of architecture. His characteristic statement to an editor in 1971, having just been selected Construction's Man of the Year by *Engineering News-Record*, is commemorated in a plaque in Onterie Center (446 E. Ontario, Chicago): "**The technical man must not be lost in his own technology. He must be able to appreciate life; and life is art, drama, music, and most importantly, people.**"



1 PDH will be awarded to eligible attendees for each lecture

Please contact the Khan Chair office at 610-758-6123 or Email: infrk@lehigh.edu with any questions.