

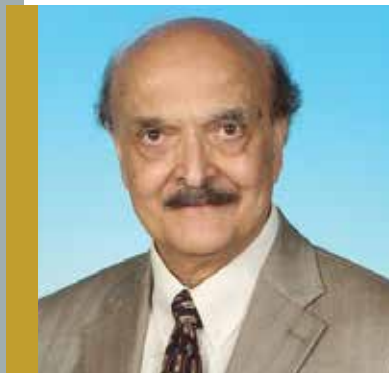


Presentations will be held  
in Whitaker Lab 303 at  
Lehigh University  
*Receptions to precede  
events starting at 4:10 P.M.*

Friday, February 23, 2018  
4:30 P.M.

*Surendra P. Shah*

Walter P. Murphy Professor  
of Civil Engineering (Emeritus)  
Northwestern University  
Evanston, IL



#### SUSTAINABILITY IN CONCRETE CONSTRUCTION BASED ON NANOTECHNOLOGY

Supertall buildings such as the one km high Kingdom Tower are constructed with concrete as a structural material. Such tall buildings are made with so-called high performance concrete, which can have strength 5 times that of conventional concrete. The development of high strength concrete is a result of our understanding of particle packing, rheology and microstructure engineering. Concrete is a critical material for infrastructure; the world wide consumption of concrete is about 2 tons for every living human being. However, its continuing use will require improving its sustainability. Nanotechnology is playing an increasing role in making concrete more sustainable. Some examples are given.

Friday, March 23, 2018  
4:30 P.M.

*Robert Sinn*

Principal, Thornton Tomasetti  
Chicago, IL



#### FROM BILBAO TO JEDDAH: AN ENGINEER'S JOURNEY

Two projects conceived twenty years apart. One, a three-story museum in the capital city of Spain's Basque country, changed the face of architecture upon opening in 1997 and was labeled "the greatest building of our time" by architect Philip Johnson. The other, an audacious 240-story tower in the Red Sea port of Jeddah, is planned to be the first manmade structure to reach one kilometer in height – an achievement comparable to a Neil Armstrong moment for structural engineers and architects. The engineering logic and structural systems development for these landmark projects are important chapters in the ongoing story of computer-based geometric and structural engineering analysis within the building industry. The presentation will compare the two projects, focusing on the key technical challenges and the analytical tools available to realize these groundbreaking designs.

Friday, April 13, 2018  
4:30 P.M.

*Yozo Fujino*

Distinguished Professor, Institute  
of Advanced Sciences  
Yokohama National University  
Yokohama, Japan



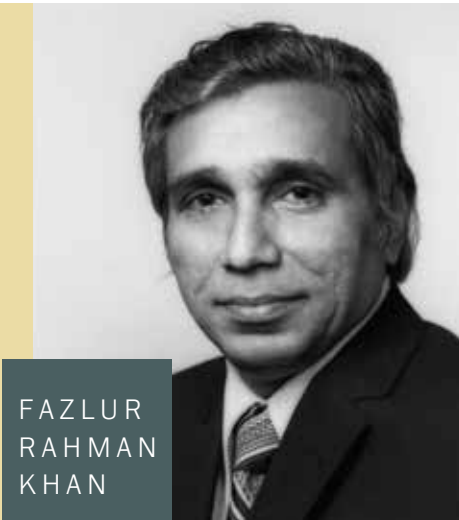
#### LESSONS LEARNED FROM 30 YEARS OF EXPERIENCE IN DYNAMICS, MONITORING AND CONTROL OF BRIDGES

Increasingly, bridges exhibit excessive vibration due to longer spans and greater flexibility, as well as excessive loading; hence, various control remedies have been developed and applied. Based on Prof. Fujino's extensive experience, various vibration displayed by existing bridges and their control are surveyed. The importance of measured vibration responses will also be presented through several examples. It is strongly stressed that monitoring in situ performance of bridges under in-service loads is essential for not only better understanding of bridge behavior, but also better lifetime management.

## ABOUT THE KHAN SERIES

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 Willis (formerly Sears) Tower – the tallest building in the United States since its completion in 1974.

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 inaugural 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.



FAZLUR  
RAHMAN  
KHAN

*This lecture series is sponsored by:*

Civil & Environmental Engineering;  
College of Engineering & Applied Science;  
Art, Architecture & Design;  
College of Arts & Sciences



**1 PDH will be awarded  
to eligible attendees  
for each lecture.**

[www.lehigh.edu/frkseries](http://www.lehigh.edu/frkseries)



# The Fazlur Rahman Khan Distinguished Lecture Series

2007

*Honoring a legacy in structural engineering and architecture*

2018

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



Fazlur Rahman Khan

1929 - 1982

Fazlur Rahman Khan ushered in a renaissance in skyscraper construction during the second half of the 20th century. Khan was a pragmatic visionary: the series of progressive ideas that he brought forth for efficient high-rise construction in the 1960s and 1970s 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).

His characteristic statement to an editor in 1971, having just been selected Construction’s Man of the Year by Engineering News Record, is commemorated on a plaque in Onterie Center, 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.”

Lynn S. Beedle

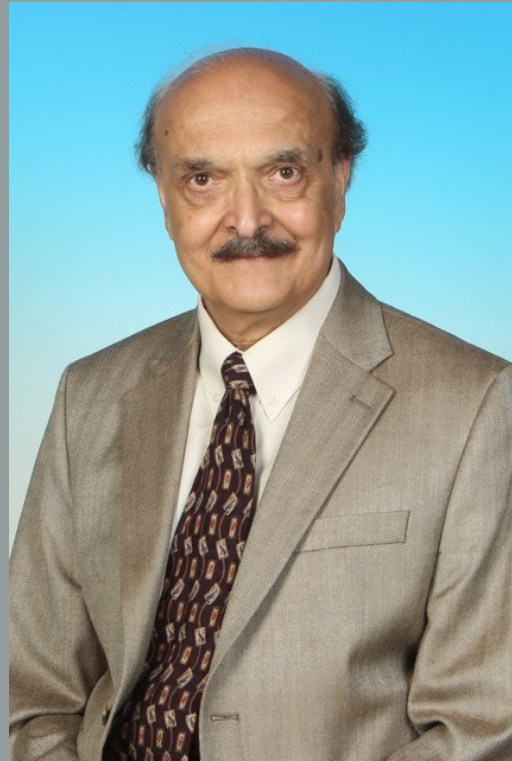
1917 - 2003

In July 1947, Lynn joined Lehigh University as Research Instructor and rose to Full Professor in 10 years. In recognition of his professional and research achievements, he was appointed to a University Distinguished Professorship in 1978.

Following the premature death of Fazlur Khan in 1982, Beedle organized the establishment at Lehigh University of the Fazlur Rahman Khan Endowed Chair.



2018 SPEAKERS



Surendra P. Shah

Walter P. Murphy Professor of Civil Engineering (Emeritus)  
Northwestern University Evanston, IL

*Sustainability in Concrete Construction Based on Nanotechnology*

February 23, 2018



Robert Sinn

Principal  
Thornton Tomasetti  
Chicago, IL

*From Bilbao to Jeddah: An Engineer’s Journey*

March 23, 2018



Yozo Fujino

Distinguished Professor  
Institute of Advanced Sciences  
Yokohama National University  
Yokohama, Japan

*Lessons Learned from 30 Years of Experience in Dynamics, Monitoring and Control of Bridges*

April 13, 2018

SPEAKERS - 2017



Eugen Brühwiler  
Professor and Dr. Structural Engineer  
Swiss Federal Institute of Technology  
Lausanne, Switzerland

*Getting More Out of Existing Bridges*

February 17, 2017



Lawrence G. Griffis  
Senior Principal/Senior Consultant  
Walter P. Moore and Associates, Inc.  
Austin, TX  
**Design and Construction of Cowboys Stadium**

March 31, 2017



Peter A. Weismantle  
Director of Supertall Building Technology  
Adrian Smith + Gordon Gill Architecture  
Chicago, IL  
**Architectural Technical Design of the New Generation of Supertall Buildings**

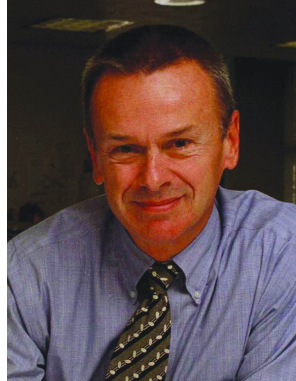
April 21, 2017

SPEAKERS - 2016



Ronald O. Hamburger  
Senior Principal  
Simpson Gumpertz & Heger, Inc.  
San Francisco, CA  
**Performance-based Design: What, How, When, Why, and Why Not to Use It**

March 4, 2016



John Zils  
Senior Structural Consultant  
Skidmore Owings & Merrill, LLP  
Chicago, IL  
**Lessons Learned**

April 15, 2016



Jin-Guang Teng  
Chair Professor of Structural Engineering  
The Hong Kong Polytechnic University  
Hong Kong, China  
**Structural Use of FRP Composites in Construction: Past Achievements and Future Opportunities**

April 22, 2016

SPEAKERS - 2015



William Pedersen  
Founding Design Partner  
Kohn Pedersen Fox Associates  
New York, NY  
**Balancing**

February 20, 2015



Glenn R. Bell  
Chief Executive Officer  
Simpson Gumpertz & Heger  
Waltham, MA  
**Structural Engineering at Mid-21st Century: Reengineering Our Roles**

March 20, 2015



Peter Marti  
Professor of Structural Engineering  
ETH Zurich  
Zurich, Switzerland  
**Science and Art of Structural Engineering**

April 17, 2015

SPEAKERS - 2014



James R. Harris  
Principal  
J.R. Harris & Company  
Denver, CO  
**The Evolution of Building Design to Resist Earthquakes**

February 15, 2014



Jon D. Magnusson  
Senior Principal  
Magnusson Klemencic Associates  
Seattle, WA  
**Structure Becoming Architecture: Case Studies of Aesthetics, Form and Efficiency**

March 22, 2014



Charles H. Thornton  
Chairman  
Charles H. Thornton & Company, LLC  
New York, NY  
**Renaissance, Rebirth and Disruptive Innovation**

April 19, 2014

SPEAKERS - 2013



R. Shankar Nair  
Senior Vice President  
exp US Services Inc.  
Chicago, IL  
**The Evolution of the Skyscraper**

February 15, 2013



John M. Kulicki  
Chairman/CEO  
Modjeski and Masters Inc.  
Mechanicsburg, PA  
**Observations on AASHTO Bridge Design**

March 22, 2013



Alfredo H-S. Ang  
Research Professor  
University of California  
Irvine, CA  
**Minimizing the Effects of Uncertainties in Developing Reliability-Based Design Criteria**

April 19, 2013

SPEAKERS - 2012



Ross B. Corotis  
Denver Business Challenge Professor of Engineering,  
University of Colorado at Boulder  
Boulder, CO  
**Natural Hazard Risk: Public Perceptions & Political Perversities**

February 17, 2012



Sharon L. Wood  
Robert L. Parker, Sr. Professor in Engineering and Chair,  
Department of Civil, Architectural, and Environmental  
Engineering,  
University of Texas at Austin, Austin, TX  
**Opportunities and Challenges for Infrastructure Monitoring**

March 23, 2012



Ted V. Galambos  
Professor Emeritus, Structural Engineering,  
University of Minnesota  
Minneapolis, MN  
**The Safety of Bridges**

April 20, 2012

SPEAKERS - 2011



David Scott  
Arup, Americas Building  
Practice Leader  
New York, NY  
**Extreme Engineering**

February 18, 2011



Chris D. Poland  
Degenkolb Engineers  
Chairman & CEO  
San Francisco, CA  
**Building Disaster Resilient Communities**

April 8, 2011



David Billington  
Princeton University  
Gordon Y.S. Wu Professor of  
Engineering, Emeritus, Princeton, NJ  
**Personal and Professional Recollections of Fazlur Khan**

September 9, 2011



Masayoshi Nakashima  
Kyoto University, Disaster Prevention  
Research Institute  
Kyoto, Japan  
**Safeguarding Quality of Life: The Role of Large-Scale Testing**

September 23, 2011

SPEAKERS - 2010



Zdeněk P. Bažant  
McCormick Institute & Walter P. Murphy Professor  
Northwestern University, Evanston, IL  
**Progress Engendered by Collapses of Record Setting Structures: Malpasset Dam, World Trade Center Towers and KB Bridge in Palau**

February 26, 2010



Ron Klemencic  
President  
Magnusson Klemencic Associates  
Seattle, WA  
**OUTRAGEOUS!**

March 19, 2010



John E. Breen  
Professor/Nasser I. Al-Rashid Chair in Civil Engineering  
The University of Texas  
Austin, TX  
**The ABCD's of Bridge Building: Affordable, Beautiful, Constructible, Durable**

April 16, 2010

SPEAKERS - 2009



Leslie E. Robertson  
Leslie E. Robertson Associates, R.L.L.P.  
New York, NY  
**The Architect and the Structural Engineer – Partners in Design**

February 20, 2009



William F. Baker  
Partner  
Skidmore, Owings & Merrill  
Chicago & London  
**Engineering the World’s Tallest: Burj Dubai**

March 20, 2009



Bruce R. Ellingwood  
Distinguished Professor & Raymond Allen Jones Chair  
Georgia Institute of Technology  
Atlanta, GA  
**Abnormal Loads & Progressive Collapse – Assessment & Mitigation of Risk**

April 17, 2009

SPEAKERS - 2008



Richard Tomasetti  
Thornton Tomasetti, Inc.  
New York, NY  
**Engineering of Major Architecture, Then and Now**

February 15, 2008



Jeremy Isenberg  
Past-President and CEO  
Weidlinger Associates, Inc.  
New York, NY  
**Structural Design for Security—Past Accomplishments and Future Directions**

March 14, 2008



John W. Fisher  
Professor Emeritus of Civil Engineering  
Lehigh University  
Bethlehem, PA  
**Overcoming Barriers to Durable Steel Bridge Systems**

April 18, 2008

SPEAKERS - 2007



Mark Sarkisian  
Partner  
Skidmore, Owings & Merrill  
San Francisco, CA  
**Khan’s Vision**

February 9, 2007



Man-Chung Tang  
Chairman of the Board  
T.Y. Lin International  
San Francisco, CA  
**Why? Why Not? What If?**

March 16, 2007



W. Gene Corley  
Senior Vice President  
CTLGroup  
Skokie, IL  
**Learning from the Attacks on an American Icon - World Trade Center Building: Performance Study**

April 20, 2007

Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture <http://www.lehigh.edu/~dmf206>

Lehigh University endowed a chair in structural engineering and architecture in Khan’s honor and in August 2006 appointed Professor Dan M. Frangopol, an expert in structural reliability, optimization, civil infrastructure systems, and life-cycle engineering, as the university’s inaugural holder of the Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture. Dr. Frangopol is the initiator and organizer of the Fazlur Rahman Khan Distinguished Lecture Series.