

FRIEDMAN FAMILY VISITING PROFESSIONALS PROGRAM

Visit to Southern Methodist University: March 31, 2022



This report summarizes the virtual visit of **Dr. Sissy Nikolaou** from National Institute of Standards and Technology (NIST) that took place at Southern Methodist University on March 31, 2022,

ITINERARY OR AGENDA

Provide the itinerary of the virtual visit.

TIME:	ACTIVITY:
9:00 AM – 09:15 AM	Presentation of the EERI and the EERI SMU Student Chapter
9:15 AM – 10:00 AM	What we do at SMU, Civil Engineering Department; presentation from Professors Nicos Makris and Usama El Shamy
10:00 AM – 11:00 AM	Lecture from the visiting Professional; Dr Sissy Nikolaou
11:00 AM – 11:15 AM	Q & A
11:15 AM – 12:00 PM	Break
12:00 PM – 1:00 PM	Careers panel discussion with Dr. Sissy Nikolaou and other local & national industry professionals
1:00 PM – 1:30 PM	Students presentations

Panelists:

- Dr Sissy Nikolaou, PhD, PE, F.ASCE; National Institute of Standards and Technology (NIST); Gaithersburg, MD
- Bradford Russell, PE, SE, F.SEI, F.ASCE; BR Architects, Inc. & PRYM Architects, LLC; Dallas, TX
- Britton W. Gentry, PE GE; Chief Engineer @ Intertek-PSI; Portland, OR
- Carmelo E. Rivero, PhD, PE; EPB Associates Inc.; Dallas, TX
- Pawan Kumar, PE; Senior Engineer, Arup; San Francisco, CA

STUDENT CHAPTER VISIT PLANNING COMMITTEE

LEAD ORGANIZER: Kostas Kalfas, Ph.D. Candidate, Chair, kkalfas@smu.edu

Bradford Russell, PE, SE, F.SEI, F.ASCE; BR Architects, Inc. & PRYM Architects, LLC; Dallas, TX

VISITING PROFESSIONAL LECTURE OVERVIEW

The 2022 Friedman Family Visiting Professionals Programme lecture that was awarded to the EERI SMU Student Chapter was a virtual event. The Visiting Professional's presentation attracted people (faculty, students and staff) from different Departments of SMU, including the Civil & Environmental Engineering, the Mechanical Engineering and the Department of Earth Sciences.

Lecture Title

Above and Beyond Life Safety: Functional Recovery Frameworks in Earthquake Engineering

Lecture Abstract

Dr. Nikolaou will discuss needs towards improving earthquake design standards for the built environment and introduce the emerging concept of "Functional Recovery," a holistic basis for earthquake-resistant design. At the request of the United States Congress, the NIST SP1254 Report (NIST-FEMA, 2021) incorporates framework needs for "better than code" design with functional recovery performance goals, requiring infrastructure to be maintained to quickly provide service to the population after earthquakes – and by extension other natural hazard events. Considering that many of the country's infrastructure elements are at a critical state with their safety - even their very operability - being questionable (ASCE, 2021), the future of engineering resilience includes the performance objective of Functional Recovery in addition to the traditional Life Safety. The speaker will present her views on this pragmatic – rather than the idealistic – goal with focus on challenges for the new generation of earthquake engineers of: (i) translating the common desire for resilience into quantifiable terms and design frameworks; (ii) addressing multidisciplinary interaction and interdependencies; (iii) using engineering as an art form which can be carved with innovative tools and documented lessons of failures and successes to create future cities and safely sustain existing communities; and (iv) integrating the human factor through social science tools of education, clear communication, risk prevention, equity and inclusion, and growth.

Professional Bio

Sissy Nikolaou is the Earthquake Engineering Group Leader of NIST, the National Institute of Standards and Technology, with more than 25 years of geotechnical consulting experience in major infrastructure and building projects worldwide. She has served on the EERI Board and she currently serves as the EERI-NYNE President, SESI co-chair, and co-leads the geotechnical aspects of the ongoing National Construction Safety Team investigation to the collapse of the Champlain South Tower condo collapse in Surfside, Florida.

SUPPLEMENTAL ACTIVITIES

What we do at SMU, Civil Engineering Department; presentation from Professors Nicos Makris and Usama El Shamy

Two of the faculty members of the Civil & Environmental Engineering Department of SMU, who specialize in Earthquake Engineering, Professors Nicos Makris and Usama El Shamy presented the current research their groups conduct on earthquake engineering and seismology. They presented the Structures and Geotechnics Laboratories of SMU. The goals of this activity were to showcase the work that takes place at SMU. The discussion that followed included questions about the facilities and the management of the laboratories.

Careers panel discussion with Dr. Sissy Nikolaou and other local & national industry professionals

The Friedman Family Visiting Professional, Dr. Sissy Nikolaou, alongside 4 professionals from the industry were invited for a panel discussion about their careers, how they started and how they progressed. They inspired the students of SMU and there was a fruitful discussion answering all the questions made by the students. The goal was for the students to hear different stories from professionals and their journey and to trigger their intuition.

Students presentations

Students from the Civil & Environmental Engineering Department presented their research and their achievements. They received vital feedback for interesting comments from experienced engineers from the

academia and the industry. The goal was for the students to increase their confidence and abilities in speaking in front of other people.

RESULTS, FEEDBACK AND LESSONS LEARNED

Brief description of challenges during the process, general reception of the program and Visiting Professional. Also, a description of other topics or disciplines the Student Chapter would like to cover in future visits, and related goals.

- Lessons learned: familiarization with EERI and EERI mission; who can become a member; what it offers to graduate members; how one can get involved and opportunities within EERI.
- Challenges during the process: difficulty in attracting the interest of students to join our chapter and contribute to this initiative; the number of the attendees is considered high, but the Chapter members were expecting more students to attend; organizing a virtual event was difficult and it was challenging to advertise it properly during the pandemic.
- General reception of the FFVP program and Visiting Professional: overall, the EERI committee was very helpful during the submission of the application for the admission to the programme; the board members of the EERI SMU Student Chapter showed enthusiasm during the organization and they are keen in submitting an application in the future; the Visiting Professional, Dr. Sissy Nikolaou was keen in visiting SMU and happily accepted our invitation to host her. She was very helpful during the whole organization of the event and she delivered an exceptional presentation that attracted the interest of people from different disciplines (structural engineering, geotechnical engineering, seismology, geology and social sciences)

ACKNOWLEDGEMENTS

The Southern Methodist University EERI Student Chapter gratefully acknowledges the support of the Friedman Family for sponsoring the travel of Dr. Sissy Nikolaou through their Friedman Family Visiting Professional Program endowment.

LIST OF ATTACHMENTS

Included at the end of this report are various attachments to supplement the information included above. A list of the attachments is included below:

- Item 1, flyer for event
- Item 2, agenda of the day

Earthquake Engineering Research Institute (EERI) SMU Student Chapter Friedman Family Visiting Professionals Lecture, 2022

Above and Beyond Life Safety: Functional Recovery Frameworks in Earthquake Engineering

Presented By:

Sissy Nikolaou, Ph.D., P.E., F. ASCE

National Institute of Standards and Technology (NIST)



Thursday, March 31, 2022

10:00 a.m. - 11:00 a.m.

Virtual event, <https://smu.zoom.us/j/93523633446>

Abstract: Dr. Nikolaou will discuss needs towards improving earthquake design standards for the built environment and introduce the emerging concept of “Functional Recovery,” a holistic basis for earthquake-resistant design. At the request of the United States Congress, the NIST SP1254 Report (NIST-FEMA, 2021) incorporates framework needs for “better than code” design with functional recovery performance goals, requiring infrastructure to be maintained to quickly provide service to the population after earthquakes – and by extension other natural hazard events. Considering that many of the country’s infrastructure elements are at a critical state with their safety - even their very operability - being questionable (ASCE, 2021), the future of engineering resilience includes the performance objective of Functional Recovery in addition to the traditional Life Safety. The speaker will present her views on this pragmatic – rather than the idealistic – goal with focus on challenges for the new generation of earthquake engineers of: (i) translating the common desire for resilience into quantifiable terms and design frameworks; (ii) addressing multidisciplinary interaction and interdependencies; (iii) using engineering as an art form which can be carved with innovative tools and documented lessons of failures and successes to create future cities and safely sustain existing communities; and (iv) integrating the human factor through social science tools of education, clear communication, risk prevention, equity and inclusion, and growth.

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Dr Sissy Nikolaou virtual lecture

Thursday, March-31, 2022; 9:00 AM – 1:30 PM

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Agenda:

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