

Tuesday, May 20, 2025, 12:00 pm
Engineering Building, Room 502-J
1930 SW 4th Avenue, Portland, OR, 97201
Remote participation: <https://pdx.zoom.us/j/7724777157>

Civil Infrastructure Seminar Series:
**Resilient Infrastructure: Leveraging Cutting-Edge
NDT for Structural Integrity**

Dr. Tomoki Shiotani
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Abstract: Aging infrastructure faces increasing risks from environmental and operational stress. This study presents a risk-based approach to selecting advanced Non-Destructive Testing (NDT) methods for resilience. MEMS-based vibration monitoring with energy harvesting enables autonomous surveillance for low-risk assets. Mid-risk systems can be monitored using passive and active elastic wave techniques. The framework aligns with RILEM recommendations, integrating passive and active wave-based methods for enhanced diagnostics. High-risk structures benefit from elastic wave and acoustic emission tomography for internal damage detection. This strategy supports proactive maintenance, improved safety, and sustainable infrastructure management.



Speaker Bio: Tomoki Shiotani is a Professor at the Innovative Technology on Infrastructure Laboratory (ITIL) and Deputy Leader of the Consortium of Innovative Technology for Infrastructures at Kyoto University. After working as a general contractor and serving as a Senior Research Fellow at Delft University of Technology, he joined Kyoto University as an Associate Professor in 2007. In 2014, he became a Professor, leading research on innovative technologies for infrastructure. His research focuses on advanced non-destructive testing (NDT) methods for assessing infrastructure such as road bridges, dams, and tunnels. He is particularly well-known for his work in fiber optic sensing, elastic wave approaches, and acoustic emission (AE) technology, contributing significantly to AE science through damage indexing and methodologies for quantifying damage. His recent interests include life-cycle evaluation of infrastructures through NDT integrated with Building Information Modeling (BIM). Shiotani chaired RILEM TC-269IAM, which concluded in 2023, and currently leads a new committee on the assessment of 3DPC (3D printed concrete) using NDT, starting in 2024. He has published more than 200 peer-reviewed papers and holds over 60 patents. Among his numerous accolades are four NDT awards from the Structural Faults and Repair Conference (UK) in 2008, 2013, 2016, and 2018, as well as prestigious honors from the Acoustic Emission Working Group (AEWG) (USA), including the Fellow Award (2013), Joseph Kaiser Achievement Award (2017), and the Gold Medal (2019), its highest distinction. He currently serves as President of the International Institute of Innovative Acoustic Emission (IIIAE), representing major AE groups from the US, Japan, and Europe.