

Title: High Performance, Smart, Carbon-neutral and Resilient Infrastructure

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**Abstract:**

Civil infrastructure is facing challenging demands from rapid population growth, aging and natural disasters. The next-generation civil infrastructure needs to be smart, carbon-neutral and resilient. The Smart Structures Laboratory at the University of British Columbia is leading the effort in developing the next-generation structural engineering technologies. In this presentation, state-of-the art technologies in high-performance earthquake resilient structural systems, modular construction and advanced AI algorithms for structural health monitoring will be presented.

**Bio:** Prof. Yang is a professor in the Department of Civil Engineering at The University of British Columbia. He received his B.Sc. (2001) and M.Sc. (2002) from the University of Buffalo, New York, and his Ph.D. from the University of California, Berkeley in 2006. His researches focus on the improving the structural performance through advanced analytical simulation and experimental testing. He has developed the next-generation performance-based design guidelines (adopted by the Applied Technology Council, the ATC-58 research team) in the United States; developed advanced experimental testing technologies, such as hybrid simulation and nonlinear control of shake table, to evaluate structural response under extreme loading conditions; developed risk-based simulation models for countries in the North and South America and the Global Earthquake Model (GEM) for the counties in the South East Asia. Prof. Yang's research has been well applied to national and international research and code committees. He has published over 100 peer reviewed journal papers and given over 100 invited speeches in many leading research institutes worldwide. Prof. Yang is one of the 19 voting members of the Standing Committee for Earthquake Design, which is responsible for writing the seismic design provision of the 2020/2025 National Building Code of Canada (NBCC). Prof. Yang is also a committee member of S16, which is responsible for writing the seismic design provision of steel structures in the Canada. Prof. Yang is an active member of the Tall Buildings Initiative Project which has developed seismic design guidelines for tall buildings in the West Coast of United States. Prof. Yang's work has been well recognized by his colleagues, he is the recipient of the 2014 CISC H.A. Krentz award, 2019 Technology award from the New Zealand Concrete Society and 2020 Meritorious achievement award from Engineers & Geoscientists British Columbia Canada, the most prestigious award given to professional engineer (P.Eng.) in the province of British Columbia, Canada.