ZCCE Seminar

**Title: Digital Twin Methods for Material Design and Infrastructure Resilience**

**Abstract**

*Resilience, a contemporary and essential philosophical idea of human society, has effective guiding principles and practicing procedures for individuals, families, communities to anticipate, prepare, respond and adapt to critical disruptions. The critical disruptions have been more frequent and severe due to population increase, urbanization, industrialization, climate change, aged infrastructure, technology innovation, pandemic, and conflict of ideals.**The guiding principles and practicing procedures are effective and have impacts on the science, technology and engineering fundamental to building and maintaining smart, resilient and sustainable infrastructures. This seminar will focus on 1) digital twin methods to design materials with better durability, and self-healing and self-sensing functionality to improve resilience; 2) characterizing, modeling, sensing, inspecting and monitoring of critical infrastructures such as bridges, tunnels, electric power transmission lines and towers for better predicting disruptions due to extreme events such as explosion, firing, icing, heavy rain, strong wind and earthquake; and 3) advanced digital platforms that incorporate multiple-source data collections, AI based data analytics, and augmented reality for better decision making, and information and emergency management.*

**Venue:** *Room 401, Computational Foundry*, Bay Campus

**Time & Date**: *10am-11am, 5th December 2022*

**Dr. Linbing Wang** is a professor in civil engineering materials and transportation infrastructure at University of Georgia. He is the founding chair of the Committee on Mechanics of Pavements, former Chair of the Nanomechanics and Micromechanics committee, a Fellow of ASCE, and a Fellow of the Engineering Mechanics Institute of ASCE. Dr. Wang has led more than 70 research projects funded by NSF, NCHRP, FHWA, DoD, DoA, DoTs, MOST and CNSF. His research centers on smart, resilient and sustainable transportation infrastructures. Specific foci of his research include multiscale characterization, modeling and simulation; smart and sustainable technologies; energy harvesting and sensor development; laser interferometry for material characterization and pavement assessment; innovative infrastructure assessment and performance predictions; high performance and multifunctional materials; smart and resilient infrastructures; pavement testing and mechanistic pavement design; infrastructure preservation and management; and IoT sensor network for structural health monitoring and safety. Dr. Wang has served as a member of committees of TRB, ASCE, and panels of NCHRP and NSF. He is the author of Mechanics of Asphalt, Microstructure and Micromechanics, McGraw Hill, and author/co-author of more than 270 journal and proceeding publications. Dr. Wang has organized/co-organized a number of international workshops, symposiums, conferences and hosted visiting students and faculty members from universities in China and Europe.