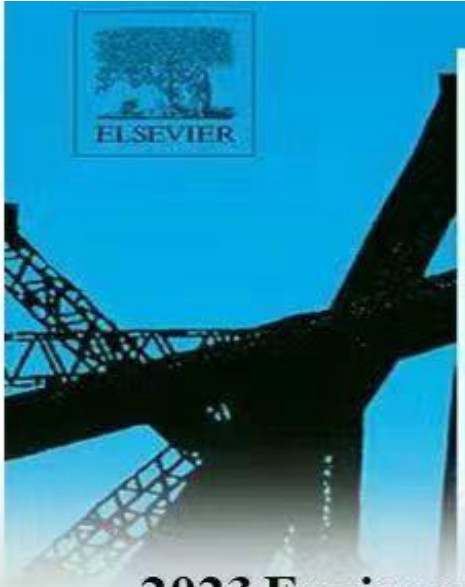

ENGINEERING STRUCTURES

2023 Engineering Structures (America/Europe)

Academic Forum Series

Title: Applications of Fiber Optic Sensors for Real-time Detection and Assessment of Interaction Between Mechanical Loads and Corrosion

Speaker: Prof. Ying Huang

Department of Civil, Construction, and Environmental Engineering

North Dakota State University

Time: 12:30-13:30 PM (Eastern Standard Time, GMT-4), March 28, 2023

Zoom Meeting: 917 3117 2256

Synopsis:

Corrosion can induce damages to structures and lead to cracking, buckling, and fatigue of key metal components. If corroded, the load-carrying capacity of structures will be reduced, and the stress-corrosion interaction will be a concern for the safety and reliability of structural steel but has yet been investigated thoroughly. This presentation will introduce the applications of three different fiber optic sensors, to detect and assess such an interaction, including fiber Bragg gating (FBG) sensors, tuber packaged-FBG (LFBG) sensors, and OFDR-based distributed fiber optic sensors. For each type of sensor, its sensing model is discussed for the detection of loads and corrosion followed by validating experiments.

Brief Biography:

Prof. Ying Huang is the Welch Faculty Fellow Professor and Walter F. and Verna Gehrts Endowed Presidential Professor in the Department of Civil and Environmental Engineering at North Dakota State University (NDSU) as well as the Director for Undergraduate Research in the Office of Research and Creative Activities at NDSU. She obtained her Ph.D. degree from Missouri University of Science and Technology in 2012. Her research interests include corrosion protection and mitigation, smart cities and autonomous systems, smart materials and structural health monitoring, intelligent transportation systems, and so on. Dr. Huang has obtained more than $11 million research grants, two US approved and pending patents, and published more than 150 peer-reviewed publications including a book chapter, 100 journal papers, and 50 conference papers, which were cited 1,350 times with an i10-index of 32 (March 2023). She has delivered more than 20 keynote and invited presentations and 30 presentations in international and national conferences. Dr. Huang has received numerous awards including the NSF CAREER Award, RCA Faculty Fellow on Undergraduate Research, 2021 NDSU College of Engineering Researcher of the Year, 2018 Welch Faculty Fellow Professor, 2017 NDSU College of Engineering Researcher of the Year, 2017 NDSU Centennial Award, 2016 NDSU Forward Leap Research Award, and 2015 NDSU Ozbun Economic Development Award. Dr. Huang is a Chief Editor, Associate Editor, or Editorial Board Member for six international journals, committee member for five professional societies. She organized several international conferences and served as the reviewer for grant proposals.