



# ME Seminar



## The Atmospheric Greenhouse Effect and Global Warming

Prof. Sandip Mazumder, Ohio State University

### ABSTRACT

This seminar will present the fundamental science behind the atmospheric greenhouse effect and global warming. Specifically, it will aim to answer the following questions: (1) what is the exact relationship between greenhouse gas concentration in the atmosphere and the Earth's temperature? (2) Why is the increasing concentration of carbon dioxide (CO<sub>2</sub>) in the atmosphere of grave concern from a global warming perspective? (3) Why is water vapor (H<sub>2</sub>O), which is also a major greenhouse gas, considered benign by the Intergovernmental Panel on Climate Change (IPCC)? (4) Is methane (CH<sub>4</sub>) of significant concern?

### ABOUT THE SPEAKER

Dr. Mazumder is a Professor and Associate Chair of Mechanical and Aerospace Engineering at The Ohio State University. He received his B.Tech. in Mechanical Engineering from IIT-Kharagpur in 1991 and his Ph.D. from Penn State University in 1997. He joined the Ohio State University (OSU) in March of 2004. Prior to joining OSU, he was employed at CFD Research Corporation in Huntsville, AL for 7 years. He is one of the architects and early developers of the commercial code CFD-ACE+(TM). His research is computational in nature, and spans three main areas: (1) computational fluid dynamics and heat transfer emphasizing on chemical reactions with applications in combustion, catalytic conversion, fuel cells, batteries and chemical vapor deposition, (2) thermal radiation and its applications, and (3) non-equilibrium transport phenomena as occurring in nanoscale systems. Dr. Mazumder is the author of two graduate-level textbooks and more than 130 papers. He is the recipient of the McCarthy award for teaching and the Lumley award for research from the OSU College of Engineering among other awards and is also a Fellow of the American Society of Mechanical Engineers (ASME) since 2011.



**August 2, 2023 (Wednesday)  
4:00 PM, A R Auditorium**