SEMINAR SERIES

北京大学工学院 力学与工程科学系

湍流与复杂系统国家重点实验室

Discovery, Design and Description of Advanced Materials (3DAM) enabled by Multiscale Computation-Experiment synergy

报告人：Jian Wang 教授

时　间：6 月 20 日 周二 下午 14:30

地　点：力学楼 434 会议室

主持人：韦小丁 研究员

报告内容摘要：

Material with high strength, good ductility, plastic flow stability, thermal stability, and irradiation tolerance are in urgent demand for advancing their applications in various environments, especially for improving the safety and efficiency of advanced nuclear reactor. Materials that employ microstructure features to improve strength, ductility, and plastic flow stability, as well manage radiation damage, and maintain high-temperature mechanical properties are especially desirable. To accelerate the discovery and design of such superb materials and advance their applications, multiscale computation-experiment synergy has demonstrated to be essential. My research is focusing on Understanding interface and defect phenomena, Developing the Defects-Microstructures-Properties relations, Designing alloys with desired microstructures and dominant deformation modes, and Predicting mechanical and irradiation behaviors of alloys and composites for applications under extreme environments through integrating multiscale experimental techniques and modelling tools. In this talk, I will discuss how to synergize multiscale computation-experiment efforts to discovery unique deformation mechanisms related to characteristic microstructure, design materials with characteristic microstructure which enables superb properties, and describe composition-microstructure-properties constitutive laws of materials via the development of multiscale material models.

报告人简介：

Dr. Jian Wang is Fellow of ASME, Fellow of ASM International, and Wilmer J. and Sally L. Hergenrader Presidential Chair of Mechanical and Materials Engineering at the University of Nebraska-Lincoln. He received his Ph.D from Rensselaer Polytechnic Institute, Troy, NY, USA, in 2006 and worked at Los Alamos National Laboratory (LANL) until 2015. His research is focusing on quantitatively exploring the structure-properties relations of materials using multi-scale theory, modeling and experimental methods and techniques. He was awarded the LANL Distinguished Postdoctoral Performance Award (2009), LDRD/Early Career Award (2011), TMS MPMD Young Leader Award (2013), International Plasticity Young Research Award (2015), Materials Today Rising Star Award in the category of Materials Genome Innovation (2018), TMS MPMD Distinguished Scientist Award (2022) and TMS BRIMACOMBE MEDALIST Award (2023). He served as Editorial Board of International Journal of Plasticity (2015~), Materials Research Letters (2016~), and others. He has published more than ~350 peer-reviewed papers (~19,000 citations and H-index = 81; 9 papers featured as Journal cover) and delivered 150+ invited/keynote lectures.

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