九州大学超顕微解析研究センター
文部科学省 マテリアル先端リサーチインフラ事業 九大ハブ機関 共催

第 248 回 HVEM研究会
のお知らせ

令和 8 年 6 月 26 日

クイーンズ大学の Yanwen Zhang 先生をお招きし、下記のように講演会を開催致します。皆様、奮ってご参加下さい。

【日 時】 令和 8 年 8 月 3 日（月） 15:00 ～ 16:30

【会 場】 九州大学 伊都キャンパス ウエスト 2 号館 931 室

【講 演】 **Prof. Yanwen Zhang**

Canada Excellence Research Chair in Impact of Radiation in Energy & Advanced Technologies
Department of Mechanical and Materials Engineering,
Queen's University

“Using Ion Beams to Shape Materials for Future Energy Technologies”

今回の研究会は日本原子力学会九州支部講演会との共催で開催します。

当研究会についてのお問い合わせは、下記の連絡先にお願いいたします。

HVEM研究会世話人： 麻生 亮太郎 ・ 山﨑 重人 ・ 嶋田 雄介
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Abstract:

Materials for applications in extreme environment electronics, nuclear energy systems, and other energy technologies must survive harsh conditions, such as radiation, heat, and stress. Ion beams are often associated with material damage because energetic ions can displace atoms from their lattice sites. However, ion beams can also be used as tools to study, modify, and sometimes even heal damage and improve materials. In this seminar, I will explain how ion beams interact with materials and how the deposited energy can alter atomic structure. I will present examples from three important classes of materials — covalent silicon carbide, ionic oxides, and metallic alloys — and show that radiation does not always degrade materials. Under certain conditions, irradiation can promote defect recovery, improve crystalline order, or guide microstructure evolution. Understanding these effects at the atomic scale can help us design materials that are more reliable and resilient in demanding environments.

Biography

Dr. Yanwen Zhang is Professor, Canada Excellence Research Chair in Impact of Radiation in Energy and Advanced Technologies, at Department of Mechanical and Materials Engineering, Smith Engineering, Queen's University, Canada. Prior to her current role, she was a Directorate Fellow at Idaho National Laboratory (INL) from 2022 to 2024, a distinguished R&D Staff at Oak Ridge National Laboratory (ORNL) with a joint faculty appointment in the Department of Materials Science and Engineering (MSE) at the University of Tennessee from 2010 to 2022. Dr. Zhang earned her B.S. and M.S. degrees in solid-state physics from Beijing Normal University (BNU China) and obtained her Ph.D. in Nuclear Physics from Lund University (Sweden) and a Ph.D. in Science from BNU (China). She began her academic career as an Assistant Professor at Uppsala University (Sweden) from 2000 to 2002 and later served as a senior/staff scientist at Pacific Northwest National Laboratory (PNNL) from 2003 to 2010.

Dr. Zhang's research focuses on fundamental and applied aspects of equilibrium and non-equilibrium defect dynamics, ion beam modification and radiation effects in materials, with an emphasis on how these processes can be modified and applied to tailor functionality and properties of complex materials. She was the recipient of the 2005 Presidential Early Career Award for Scientists and Engineers (PECAS), the highest honor bestowed by the U.S. government on outstanding scientists and engineers beginning their independent careers. She directed an Energy Frontier Research Center for Energy Dissipation to Defect Evolution from 2014-2020 to advance the understanding of energy dissipation mechanisms in complex alloys, with ultimate aims to control the evolution of defects in structural materials. Dr. Zhang is a Fellow of American Ceramic Society. She has ~440 journal articles with an H-index of 60 and over 17,000 citations based on the Web of Science, and an H-index of 73 and over 23,000 citations based on Google Scholar. She has over 100 invited presentations and nearly 70 other presentations at national and international scientific conferences, workshops, research institutions, and universities.