

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 247 回 HVEM研究会 のお知らせ

令和 8 年 3 月 26 日

ミシガン大学の Lumin Wang 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 4 月 20 日(月) 16:00 ~ 17:30

【会 場】 九州大学 伊都キャンパス ウエスト 2 号館 9 階 931 室

【講 演】 **Prof. Lumin Wang**

Department of Nuclear Engineering and Radiological Sciences  
Department of Materials Science and Engineering  
University of Michigan, USA

**“Radiation Effects in Ceramic Nuclear Waste Forms:  
A Systematic Study by TEM and Energetic Particle Beams”**

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当研究会についてのお問い合わせは、下記の連絡先をお願いいたします。

HVEM研究会世話人: 麻生 亮太郎 ・ 山崎 重人 ・ 嶋田 雄介

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## **Abstract**

Nuclear waste forms are glass or ceramic materials designed to immobilize radionuclides for safe disposal over geological timescales. This seminar focuses primarily on ceramic waste forms, which incorporate radioactive elements into well-defined crystalline structures. However, the decay of incorporated radionuclides continuously generates radiation damage within these materials. Understanding how radiation affects their structure, stability, and chemical durability is therefore essential for ensuring the reliable long-term containment of radioactive waste.

In this seminar, the author will present results from his research group on the use of ion and electron irradiation with in-situ and ex-situ TEM to simulate alpha- and beta-decay damage processes in a range of ceramic waste forms. Materials studied include zircon and pyrochlore for actinide immobilization, as well as zeolite and hollandite for fission product incorporation. The roles of crystal structure and chemical composition in controlling radiation-induced amorphization will be discussed based on extensive experimental data.

## **Biography**

Dr. Lumin Wang is a professor jointly appointed in the Department of Nuclear Engineering and Radiological Sciences and the Department of Materials Science and Engineering at the University of Michigan, Ann Arbor. He received his undergraduate education in Beijing, China, before moving to the United States in 1982. He earned both his M.S. (1984) and Ph.D. (1988) degrees in materials science from the University of Wisconsin–Madison.

Dr. Wang conducted research at Argonne National Laboratory and the University of New Mexico before joining the faculty at the University of Michigan in 1997. His research focuses on radiation effects in materials for nuclear applications, as well as the development of novel nanostructures in semiconductors and ceramics using particle-beam processing.