ULVAC-PHI on-line Seminar

March 18, 2025 2:00 PM to 3:00 PM (JST)

Advanced Surface Analysis Techniques for Material Characterization

Seminar Summary

This webinar explores cutting-edge surface analysis techniques applied to two important areas in materials science: high entropy alloys (HEAs) and multi-cation hybrid perovskites. The seminar features two insightful talks that delve into the surface characterization of these materials to investigate their corrosion mechanisms and photostability properties. Both talks will highlight the importance of surface analysis techniques in understanding the behavior and performance of advanced materials in real-world applications. These insights are critical for developing more durable, efficient, and sustainable materials for a wide range of industries.

Registration!

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Talk 1: *Surface Characterization of High Entropy Alloys for Corrosion Mechanism Investigation Using Surface Analysis Techniques*

The first talk focuses on the application of advanced surface analysis techniques to investigate the corrosion mechanisms of high entropy alloys (HEAs). HEAs, known for their exceptional mechanical properties, are increasingly used in harsh environments. The speaker will introduce how surface characterization methods, such as X-ray photoelectron spectroscopy (XPS), hard X-ray photoelectron spectroscopy (HAXPES), and Time-of-Flight Secondary Ion Mass Spectroscopy (ToF-SIMS), can provide valuable insights into the corrosion behavior of HEAs. The session will discuss the importance of understanding surface composition to optimize the performance of these alloys in industrial applications.

Talk 2: *Photostability and Degradation Mechanisms of Multi-Cation Hybrid Perovskites: Insights from Surface Analysis Techniques*

The second talk addresses the photostability and degradation mechanisms of multi-cation hybrid perovskites, a promising class of materials for optoelectronic applications such as solar cells. The speaker will highlight the critical role of surface analysis techniques, including XPS and ToF-SIMS, in assessing the stability of these materials under light soaking. Key degradation pathways will be identified, and the talk will provide a detailed examination of how surface interactions and material composition influence the long-term performance and reliability of perovskite devices.

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