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INSTITUTE OF ELECTRONIC STRUCTURE AND LASER

IESL SEMINAR

Monday 27/03/2023, 14:30

FORTH Seminar Room 1

DYNASTY

DYNAmics and STructural analYsis of 2D materials

Unlocking the Potential of SEM: A Comprehensive Guide, Applications in Material Science and Beyond

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Abstract

Scanning Electron Microscopy (SEM) is a powerful tool for exploring the micro and nanoscale structure of materials. In this lecture, we will provide a comprehensive guide to SEM, covering its basic components, imaging and analysis techniques, and sample preparation methods. We will also discuss various applications of SEM in material science and beyond. Additionally, we will delve into advanced SEM techniques, such as in situ and operando SEM, which enable the study of materials under various environmental and loading conditions. Furthermore, we will explore the field of electron/ion beam lithography, which has broad applications in nanotechnology. One specific application that we will focus on is the use of SEM and e-beam lithography in creating tailored ferroelectric domain structures for laser light frequency conversion. This application has significant implications for the development of efficient frequency conversion devices for laser applications. Finally, future developments and potential advancements of SEM will be briefly discussed.

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