

Advances in Materials Problem Solving with the Electron Microscope: Volume 589

This book was motivated by the remarkable advances that continue to be made in electron microscope instrumentation and techniques for applications to materials science. Advances include quantitative high-resolution imaging, atomic-resolution Z-contrast imaging, elemental mapping by energy-filtered TEM or spectrum imaging, atomic resolution EELS for composition and bonding, quantitative CBED, site-occupancy determination by ALCHEMI, electron holography, EBSP in the SEM for phase identification and orientation imaging microscopy, low-voltage microanalysis of bulk specimens, and in situ experiments of dynamic phenomena. The book emphasizes how these recent developments in electron microscopy are being used to solve materials problems. It features different groups of materials or microstructural components rather than electron microscope techniques or instrumentation. Papers focus on low-energy electron microscopy of surfaces, crystallography, defects, specimen preparation, and interfaces in metals and ceramics. Technological applications include magnetic materials, microelectronic materials, partially ordered and nanophase materials, polymers, ceramics, metallic alloys, concrete, biomaterials, and glasses.



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