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Nota di contenuto	Principles and Practice of Variable Pressure/Environmental Scanning Electron Microscopy (VP-ESEM); Contents; Preface; 1 A Brief Historical Overview; 1.1 Scanning Electron Microscopy; 1.1.1 The Beginnings; 1.1.2 The Need for Added Capabilities; 1.2 The Development of Imaging in a Gas Environment; 1.2.1 Overcoming the Limits of Conventional SEM; 1.2.2 Leaps and Bounds; 2 Principles of SEM; 2.1 Introduction; 2.1.1 Why Use An Electron Beam?; 2.1.2 The SEM Column; 2.1.3 Why Do We Need a Vacuum System?; 2.2 Electron Sources; 2.2.1 Thermionic Emission Sources; 2.2.2 Field Emission Sources 2.3 Electron Optics2.3.1 Lenses; 2.3.2 Lens Aberrations; 2.4 Signals and Detection; 2.4.1 Primary Electrons and the Interaction Volume; 2.4.2 Backscattered Electrons; 2.4.3 Secondary Electrons; 2.4.4 X-ray Radiation; 2.4.5 Cathodoluminescence; 2.5 Practical Aspects of Electron Beam Irradiation; 2.5.1 Radiation Damage; 2.5.2 Minimising Specimen Charging - Low-Voltage SEM; 2.5.3 Increasing Surface and Bulk Conductivities; 2.6 SEM in Operation; 2.6.1 Building Up an Image; 2.6.2 Magnification; 2.6.3 Signal-to-Noise Ratio; 2.6.4 Contrast; 2.6.5 Adjusting the Contrast; 2.6.6 Resolution

2.6.7 Depth of Field2.6.8 Image Capture; 3 General Principles of VP-ESEM: Utilising a Gas; 3.1 Introduction; 3.2 VP-ESEM Instrumentation; 3.2.1 Typical Features; 3.2.2 Primary Electron Scattering in VP-ESEM - the General Case; 3.2.3 Units of Pressure; 3.3 Signal Generation in a Gas; 3.3.1 Introduction; 3.3.2 Direct Collection of Electrons and Ions; 3.3.3 Collection of Photons - the Gas Luminescence Signal; 3.3.4 Detecting Indirect Electron and Ion Currents; 3.4 Imaging with Water Vapour; 3.4.1 Introduction; 3.4.2 Thermodynamic Equilibria; 3.4.3 Nonequilibrium Conditions
3.4.4 Practicalities of Stabilising Hydrated Specimens4 Imaging and Analysis in VP-ESEM: The Influence of a Gas; 4.1 Introduction; 4.2 Background to Theoretical Calculations; 4.2.1 Calculating the Mean Free Paths of Primary Electrons; 4.2.2 Calculating Pressure-Dependent Variables; 4.2.3 Estimating the 'Useful' Primary Electron Current; 4.3 Which Gas?; 4.3.1 Introduction; 4.3.2 Usefulness of the Gas - Experimental Conditions; 4.3.3 Ionisation and Excitation for Different Gases; 4.3.4 Scattering of the Primary Electron Beam in Different Gases; 4.4 Exploring the Gas Path Length
4.4.1 Introduction4.4.2 Influence of GPL on the Skirt Radius; 4.4.3 Gas Path Length and Useful Primary Electron Beam Current; 4.4.4 Constraints on Reducing the Gas Path Length; 4.4.5 Separating Gas Path Length from Working Distance; 4.5 How Much Gas?; 4.5.1 Introduction; 4.5.2 Scattering of Primary Electrons as a Function of Pressure; 4.6 X-ray Microanalysis in VP-ESEM; 4.6.1 Introduction; 4.6.2 Effects of Chamber Gas on X-ray Signals; 4.6.3 Considerations for Minimising the Effects of the Gas; 4.6.4 Post-Acquisition Methods to Correct for Scattering
5 Imaging Uncoated Specimens in the VP-ESEM

Sommario/riassunto

Offers a simple starting point to VPSEM, especially for new users, technicians and students containing clear, concise explanationsCrucially, the principles and applications outlined in this book are completely generic: i.e. applicable to all types of VPSEM, irrespective of manufacturer.Information presented will enable reader to turn principles into practicePublished in association with the Royal Microscopical Society (RMS) -www.rms.org.uk