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2.1.6 Current Distribution, Porous and Rough Electrodes-the Effect of Geometry2.1.6.1 Current Distribution Problems; 2.1.6.2 Rough and Porous Electrodes; 2.2 Physical and Electrochemical Models; 2.2.1 The Modeling of Electrochemical Systems; 2.2.2 Equivalent Circuits; 2.2.2.1 Unification of Immitance Responses; 2.2.2.2 Distributed Circuit Elements; 2.2.2.3 Ambiguous Circuits; 2.2.3 Modeling Results; 2.2.3.1 Introduction; 2.2.3.2 Supported Situations; 2.2.3.3 Unsupported Situations: Theoretical Models; 2.2.3.4 Unsupported Situations: Equivalent Network Models
2.2.3.5 Unsupported Situations: Empirical and Semiempirical Models3. Measuring Techniques and Data Analysis; 3.1 Impedance Measurement Techniques; 3.1.1 Introduction; 3.1.2 Frequency Domain Methods; 3.1.2.1 Audio Frequency Bridges; 3.1.2.2 Transformer Ratio Arm Bridges; 3.1.2.3 Berberian-Cole Bridge; 3.1.2.4 Considerations of Potentiostatic Control; 3.1.2.5 Oscilloscopic Methods for Direct Measurement; 3.1.2.6 Phase-Sensitive Detection for Direct Measurement; 3.1.2.7 Automated Frequency Response Analysis; 3.1.2.8 Automated Impedance Analyzers; 3.1.2.9 The Use of Kramers-Kronig Transforms
3.1.2.10 Spectrum Analyzers

Sommario/riassunto

A skillful balance of theoretical considerations and practical know-howBacked by a team of expert contributors, the Second Edition of this highly acclaimed publication brings a solid understanding of impedance spectroscopy to students, researchers, and engineers in physical chemistry, electrochemistry, and physics. Starting with general principles, the book moves on to explain in detail practical applications for the characterization of materials in electrochemistry, semiconductors, solid electrolytes, corrosion, solid-state devices, and electrochemical power sources. The book covers all o