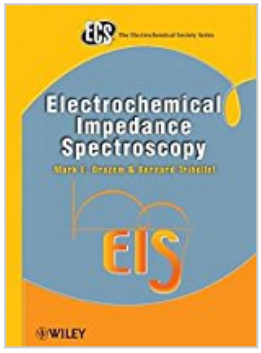

Electrochemical Impedance Spectroscopy

By Mark E. Orazem, Bernard Tribollet

Electrochemical Impedance Spectroscopy By Mark E. Orazem, Bernard Tribollet

Using electrochemical impedance spectroscopy in a broad range of applications

This book provides the background and training suitable for application of impedance spectroscopy to varied applications, such as corrosion, biomedical devices, semiconductors and solid-state devices, sensors, batteries, fuel cells, electrochemical capacitors, dielectric measurements, coatings, electrochromic materials, analytical chemistry, and imaging. The emphasis is on generally applicable fundamentals rather than on detailed treatment of applications. With numerous illustrative examples showing how these principles are applied to common impedance problems, *Electrochemical Impedance Spectroscopy* is ideal either for course study or for independent self-study, covering:

- Essential background, including complex variables, differential equations, statistics, electrical circuits, electrochemistry, and instrumentation
- Experimental techniques, including methods used to measure impedance and other transfer functions
- Process models, demonstrating how deterministic models of impedance response can be developed from physical and kinetic descriptions
- Interpretation strategies, describing methods of interpretating of impedance data, ranging from graphical methods to complex nonlinear regression
- Error structure, providing a conceptual understanding of stochastic, bias, and fitting errors in frequency-domain measurements
- An overview that provides a philosophy for electrochemical impedance spectroscopy that integrates experimental observation, model development, and error analysis

This is an excellent textbook for graduate students in electrochemistry, materials science, and chemical engineering. It's also a great self-study guide and reference for scientists and engineers who work with electrochemistry, corrosion, and electrochemical technology, including those in the biomedical field, and for users and vendors of impedance-measuring instrumentation.

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Electrochemical Impedance Spectroscopy By Mark E. Orazem, Bernard Tribollet Bibliography

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Editorial Review

Review
"I am pleased to recommend their book to professionals and graduate students in a variety of disciplines such as electrochemistry, materials science, physics and electrical and chemical engineering…" (*Angewandte Chemie*, February 16, 2009)

From the Back Cover
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About the Author
MARK E. ORAZEM is a Professor in the Department of Chemical Engineering at the University of Florida. He organized the 6th International Symposium on Electrochemical Impedance Spectroscopy and teaches a short course on impedance spectroscopy for The Electrochemical Society. Dr. Orazem is a Fellow of The Electrochemical Society (ECS) and a member of the International Society of Electrochemistry (ISE).

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