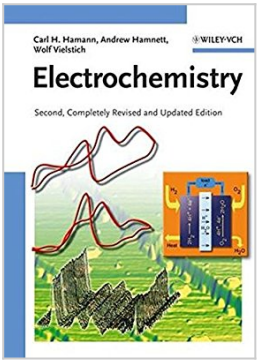

Electrochemistry

By Carl H. Hamann, Andrew Hamnett, Wolf Vielstich

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This second, completely updated edition of a classic textbook provides a concise introduction to the fundamental principles of modern electrochemistry, with an emphasis on applications in energy technology. The renowned and experienced scientist authors present the material in a didactically skilful and lucid manner. They cover the physical-chemical fundamentals as well as such modern methods of investigation as spectroelectrochemistry and mass spectrometry, electrochemical analysis and production methods, as well as fuel cells and micro- and nanotechnology.
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Editorial Review

Review
"The text is certainly comprehensive in its coverage, ranging from ionic mobilities and liquid junction potentials, through redox electrochemistry of proteins and surface spectroscopy of electrocatalytic reactions, to fuel cells, batteries and gas sensors." (*Chromatographia*, February 2010)

"The renowned authorial team emphasize application in energy technology while covering the physicalchemical fundamentals, modern methods of investigation, electrochemical analysis and production methods, as well as fuel cells and micro-and nanotechnology." (*Chimie Nouvelle*, March 2010)"Both classical contents and modern developments of electrochemistry have been incorporated in this textbook to educate young modern electrochemists … .A very solid and useful textbook. I highly recommend it to students and researchers." (*The Higher Education Academy Physical Sciences Centre*, December 2008)

"…an excellent introduction to the physical-chemical aspects of electrochemistry…and is strongly recommended." (*CHOICE*, December 2007)

From the Back Cover
Batteries, fuel cells, corrosion and electricity - with the advent of materials science and nanotechnology, electrochemistry is more important than ever. It is also becoming increasingly interdisciplinary, such that electrochemistry is a must for all chemistry students in their courses and for laboratory courses in physical chemistry.
This second, completely updated edition of a classic textbook provides a concise introduction to modern electrochemistry, from the physical-chemical fundamentals right up to technical applications, with an emphasis on energy technology. The renowned and experienced textbook authors present the material in a didactically skilful and lucid manner, backed by numerous informative illustrations and tables.
The scope of this book covers such modern methods of investigation as spectroelectrochemistry and mass spectrometry, electrochemical analysis and production methods, as well as fuel cells and micro- and nanotechnology.
The result is required reading for those majoring in chemistry, as well as those studying chemical engineering, materials science and physics.

About the Author
Carl H. Hamann:
Following his studies in mathematics, physics, biology and economics in Hamburg and Bonn, graduating in 1966 as a physicist, Carl H. Hamann gained his doctorate in 1970, becoming Professor for Applied Physical Chemistry at the University of Oldenburg in 1975. He has since concentrated mainly on fuel cells, electrochemical metrology, passage and adsorption kinetics, turbulent flows, the thermodynamics of irreversible systems, preparative electroorganic chemistry and technical electrochemistry. Professor Hamann has thus far published some 80 articles in journals and books.

Wolf Vielstich:
As Heinz Gerischer's first student, in G?ttingen in 1952/53, Wolf Vielstich was concerned with developing a fast Potentiostaten while determining exchange current densities. Upon starting work at the Institute for Physical Chemistry, Bonn University, in 1960 he demonstrated that, apart from mercury, reproducible cyclic

voltamograms, such as for the oxidation of hydrogen and methanol, are contained in solid electrodes, including Pt, Ir, Rh, Au and Pd. There then followed experiments with methanol/air and NiMH cells, among others. He was always interested in developing novel methods, such as the rotating ring electrode, on-line MS (DEMS), in-situ FTIRS and UHV analysis of adsorbants. Between 1986 and 1993, Wolf Vielstich was the Coordinator of the first European project to develop a DMFC, and in 1998 he was awarded the Faraday Medal by the Royal Chemical Society. Since 1999 he has been working as a guest of the Universidade de Sao Paulo, and edited Wiley's Handbook of Fuel Cells (2003).

Professor Hamnett graduated from the University of Oxford with a BA (Chemistry) in 1970 and a D.Phil. (Chemistry) in 1973. He has held research and academic positions at the University of British Columbia, Canada, and at Oxford and Newcastle Universities, England, before his appointment in January 2001 as Principal and Vice-chancellor of the University of Strathclyde. He has nearly 200 publications in books and scientific journals, covering areas of spectroscopy, quantum theory and electrochemistry. His primary academic interests in recent years include the development and utilisation of spectro-electrochemical techniques in electrochemistry, and the development of improved fuel cells and solar-energy conversion devices.

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