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This long awaited and thoroughly updated version of the classic text (Plenum Press, 1970) explains the subject of electrochemistry in clear, straightforward language for undergraduates and mature scientists who want to understand solutions. Like its predecessor, the new text presents the electrochemistry of solutions at the molecular level. The Second Edition takes full advantage of the advances in microscopy, computing power, and industrial applications in the quarter century since the publication of the First Edition. Such new techniques include scanning-tunneling microscopy, which enables us to see atoms on electrodes; and new computers capable of molecular dynamics calculations that are used in arriving at experimental values.

Chapter 10 starts with a detailed description of what happens when light strikes semi-conductor electrodes and splits water, thus providing in hydrogen a clean fuel. There have of course been revolutionary advances here since the First Edition was written. The book also discusses electrochemical methods that may provide the most economical path to many new syntheses - for example, the synthesis of the textile, nylon. The broad area of the breakdown of material in moist air, and its electrochemistry is taken up in the substantial Chapter 12. Another exciting topic covered is the evolution of energy conversion and storage which lie at the cutting edge of clean automobile development. Chapter 14 presents from a fresh perspective a discussion of electrochemical mechanisms in Biology, and Chapter 15 shows how new electrochemical approaches may potentially alleviate many environmental problems.