
Preface

The first edition of *Interfacial Chemistry* is now 15 years old, and has been out of print for about half that time. So much has happened in electrochemistry since then, that major changes were required. Therefore, we decided to join forces, as we have in other aspects of life, and write a thoroughly revised and updated version.

The outlook is the same as in the first edition: We treat the fundamentals of electrochemistry both from a microscopic and a macroscopic point of view, focusing on metal-solution interfaces. Understanding interfaces requires a basic knowledge of the two adjoining phases; therefore we start by reviewing briefly a few fundamental properties of solids and electrolyte solutions. The rest of the chapters follows more or less a logical order, beginning with the interface in the absence of reactions, through adsorption phenomena, and to reactions of increasing complexity. Special chapters are devoted to electrode surface processes, and to liquid-liquid interfaces. We conclude with the most important electrochemical experimental techniques, treating especially the methods suited for fast reactions in some detail. To some extent this is our response to the lamentable fashion to use nothing but cyclic voltammetry for the investigation of reactions. In contrast to the first edition, we do not cover the so-called non-traditional methods, which have been developed outside of electrochemistry. They would require a separate book for an adequate treatment.

So where has there been major progress during the last 15 years? Of course, we have learnt many details about the structure of adsorbate layers and, though to a lesser extent, about reaction steps. But most of this has been incremental, and can be considered as the normal development of a healthy branch of science. Breakthroughs have occurred, in our view, in our understanding of electrocatalysis and of electrochemical surface processes, and this is reflected in this book. Self-assembled monolayers is another branch that has grown tremendously, but again this topic is too diverse to be treated in any detail. Somewhat surprisingly, there has also been significant progress in the thermodynamics of solid electrodes, a subject that had been considered

as closed since the works of Grahame and Parsons. This is a purely personal list, and certainly biased by the fact that we have been heavily involved in most of these topics. But anyone is welcome to disagree and to draw up his own list.

We want to thank all of our colleagues and students who have helped us in writing this book, and CONICET Argentina for continued support. Above all, we are grateful to Harald Ibach, who, besides writing a flattering foreword, took the trouble to read the whole book and gave us excellent advice on a number of issues. As a personal note, we thank Anahi and Nahuel for keeping our life in balance. It is customary to thank one's spouse for patient support; however, our spouses showed little patience, and were critical of every line we wrote.

Finally we want to recommend a few books as supplementary reading: The electrochemical textbook that we like best is Sato's [1], but Hamann, Hamnett, Vielstich [2] is also a good, general textbook and covers applied topics as well. Ibach's monograph [3] covers the physics of surfaces and interfaces with precision, and complements ours. Of the older books, Delahay's [4] is the best, and an invaluable source for transient techniques.

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