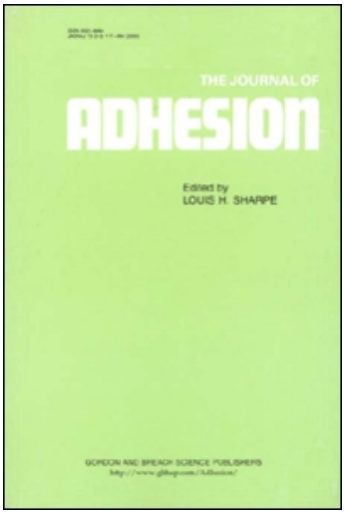

The Journal of Adhesion
Publication details, including instructions for authors and subscription information:
http://www.informaworld.com/smpp/title~content=t713453635

Surface Chemistry of Solid and Liquid Interfaces, by H. Yildirim Erbil

Lieng-Huang Lee Consultant

To cite this Article Lee Consultant, Lieng-Huang(2007) '**Surface Chemistry of Solid and Liquid Interfaces**, by H. Yildirim Erbil', The Journal of Adhesion, 83: 5, 507 — 508
To link to this Article: DOI: 10.1080/00218460701388948
URL: http://dx.doi.org/10.1080/00218460701388948

The Journal of Adhesion, 83:507–508, 2007

ISSN: 0021-8464 print/1545-5823 online
DOI: 10.1080/00218460701388948

Taylor & Francis
Taylor & Francis Group

Book Review

Surface Chemistry of Solid and Liquid Interfaces, by H. Yildirim Erbil, (paperback with schematics), 368 pages, (Blackwell Publishing Ltd., Oxford, July 2006); 1st edition. (ISBN-10: 1405119683); and (ISBN-13: 978-1405119689). It is priced at US$69.99.

From the Chemical Engineering Department of the Gebze Institute of Technology, Kocaeli, Turkey, Professor H. Yildirim Erbil, who has research interests in physical chemistry and surface properties of polymers, has written a new book, "Surface Chemistry of Solid and Liquid Interfaces". This is a valuable addition to the subject of surface chemistry. This book, though introductory, does generally follow the tradition of "The Physics and Chemistry of Surfaces" by Professor Neil Kensington Adam (Oxford University Press, Oxford, 1941, also (Dover Publications, Mineola, NY, 1968), and "Physical Chemistry of Surfaces" by Professor Arthur W. Adamson. (Interscience, New York).

This book is divided into three parts and ten chapters. The first part (three chapters) deals with basic principles consisting of an introduction to surfaces and interfaces, molecular interactions, and thermodynamics of interfaces. Readers are reminded about the importance of basic knowledge obtained in related courses such as physical chemistry. Various molecular interactions are briefly described. Among them, van der Waals interactions and hydrogen bonding are discussed in detail. Finally, hydrophobic and hydrophilic interactions are mentioned with the emphasis on the environments of biological systems.

The second part (four chapters) deals with liquids consisting of pure liquid surfaces, liquid solution surfaces, experimental determinations, and the potential energy between particles and surfaces. For liquids, various subjects are delineated, such as the Clausius-Clapeyron Equation, the Young-Laplace Equation, the Kelvin Equation, liquid surface tension, capillary condensation, and nucleation. For liquid solution surfaces, surface excess, the Gibbs dividing surface, the Gibbs adsorption isotherm, the Marangoni effect, Langmuir monolayers, critical micelle concentration (CMC), bilayers, vesicles, liposomes, biological cell membranes, inverted micelles, and the Langmuir-Brodgett (LB) method in coating monolayers, multilayers and LB films are presented. For potential energy of interactions between particles and

surfaces, interactions between macroscopic bodies are delineated. Hamaker approaches for various microscopic conditions are given. The Langbein approximation, Derjaguin approximations, and Lifshitz approach are briefly mentioned.

The third part (three chapters) deals with solids consisting of solid surfaces, contact angles of liquid drops on solids, and some applications of solid liquid interfaces. On solid surfaces, experimentation on solids under ultrahigh vacuum, surface free energy of solids, gas adsorption on solids including Langmuir isotherm, B.E.T. multilayer adsorption isotherm, and catalytic activity of surfaces are discussed. On contact angle, Young's Equation, measurements of static and dynamic contact angles, contact angle hysteresis, and various calculations of solid surface tension from contact angles are evaluated. In the last chapter on applications, two items are briefly mentioned: 1. Adsorption from solution, and 2. Detergency.

This book is clearly written, and the schematics are good. Each chapter contains a list of references. A detailed index is attached at the end of the book. For an introductory text, it is unjustified to expect it to be all inclusive. However, an essential chapter dealing with electrical phenomena at interfaces is omitted. This book should be useful for undergraduate and graduate students who major in (or are interested in) surface chemistry. It is also recommended as a handy tool for industrial researchers who are working in the field of adhesion, biological technology and colloid and surface chemistry.

Lieng-Huang Lee, Ph.D.
Consultant
796 John Glenn Blvd.
Webster, NY 14580, USA
E-mail: lhlee@frontiernet.net