

SYMPOSIUM ON PROPERTIES OF SURFACES

INTRODUCTION

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So many phenomena involving materials relate closely to properties of surfaces that the subject is a good point of departure for the study and understanding of the properties of materials. This Symposium on Properties of Surfaces sponsored by the ASTM Division of Materials Sciences brings together outstanding authorities who discuss their subjects from the point of view of the specialist communicating with the non-specialist. Thus, the engineer who must use materials is helped to understand their properties and the technical expert who devises tests and specifications for materials is aided in establishing standards on a more rational, less empirical basis.

The fundamental chemical and physical principles which account for surface phenomena are simple in concept and few in number and yet their understanding enables some prediction and a measure of control over such properties as adhesion, lubrication, adsorption, stability of colloidal dispersions, corrosion, catalysis, photo- and thermoelectric effects and many others.

While some readers may wish to select and read certain papers without regard to sequence, there is merit in starting at the beginning and proceeding through the book without skipping.

Prof. Michaels in his discussion of the fundamentals sets the stage for subsequent discussions by Cabrera and Adamson on stability of structure and structure of crystal surfaces, and thence to Emmett on chemisorption and catalysis and Brunauer and Copeland on adsorption of gases on surfaces.

Prof. Müller next describes the exciting technique of field ion microscopy whereby the actual atomic pattern of the surface of refractory metals may be seen even in motion. R. M. Burns then discusses corrosion in relation to metallic surfaces and with due regard for the fundamentals he brings the reader firmly down to earth with a practical problem and what is now known about it.

In a similar vein Godfrey shows how the properties of surfaces affect lubrication and then Marian relates surface texture to the problems of adhesive bonding.

Thus, the sequence is from the fundamentals to discussion of surface phenomena and finally on the relation of surface properties to practical problems of corrosion, lubrication, and adhesion.

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