# Book Reviews

G. E. Warren, editor

## Surface Treatment for Improved Performance and Properties

*Edited by J.J. Burke and V. Weiss. Plenum Press, New York, NY 1979; 224 pp ($35.00)*

Reviewed by James F. Jenkins, P.E., Naval Civil Engineering Laboratory, Port Hueneme, CA 93043

The Annual Sagamore Army Materials Research Conference is dedicated to the in-depth exploration of important topics in materials science. The 26th Annual Conference held in July 1979 addressed physical and chemical surface characteristics, surface-modification techniques, and material properties and processing. *Surface Treatments for Improved Performance and Properties* is the compact volume containing the proceedings of this conference.

Like most conferences, this one was generally directed toward an interchange of information between experts in a particular field. However, this conference goes beyond the norm. While the proceedings do provide an excellent snapshot view of the state-of-the-art in surface treatments for researchers in the field, it is organized and presented in such a manner that potential users of the technology who have only a limited background in surface chemistry can understand the basic concepts presented and the research technique described.

The volume begins with an excellent fundamental overview of surface chemistry, surface-related properties, surface-research techniques and the potential for improvement of material properties by surface modification. The reader with limited background in surface science should gain sufficient insight into the technology by reading the introduction to enable him to follow the more detailed and technical papers presented in the volume.

The detailed technical papers which follow the introduction are clearly written and emphasize the practical aspects of the research techniques and the results obtained. Sufficient theoretical background is usually present to clarify the methods and results. Liberal use of graphs, charts, line drawings and well-reproduced photographs and photomicrographs throughout the volume complement the clarity of the text. Specific topics addressed include the surface-science aspects of surface characterization, reaction kinetics, surface treatments for enhanced bonding, hydrogen embrittlement, corrosion, oxidation, mechanical properties, fracture resistance, fretting and nonmetallic materials.