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BOOK REVIEW

Solid State Surface Science, Volume 1. Edited by MINO GREEN. Dekker, New York, 1969. xii + 420 pp. $18.50.

According to the editor, this is the first volume in a series devoted to the area spanning the physics and chemistry of solid surfaces. If the series performs well in this role, it will fill an important gap in the literature of surface science. The first issue presents short reviews and summaries, filling a function in its chosen area similar to that of Advances in Catalysis in heterogeneous catalysis. We suggest the research worker in catalysis will find his interest varying from volume to volume; however, he should be aware of the series.

In Volume I, under review, there are five chapters, three of which are of some interest to the research worker in catalysis. These three chapters are written by Rivière, Green and Lee, and Horiuti and Toya.

J. C. Rivière presents an excellent review of the techniques and results of work function measurements. This parameter has been related to catalytic activity, primarily by the Russian workers. The article does not emphasize changes in work function with adsorption, which from our point of view is an unfortunate omission, but does provide an excellent critical review of work on "clean" surfaces.

M. Green and M. J. Lee discuss "Simple Complexes on Semiconductor Surfaces," which consists of some miscellaneous thoughts regarding covalent, electrostatic, and charge transfer interactions between the adsorbent and adsorbate. The concepts are well formulated; however, there seems inadequate discussion of the limitations of the simple models.

J. Horiuti and T. Toya, in another theoretical chapter, "Chemisorbed Hydrogen," argue that hydrogen chemisorbs on metals in two ways. In one, the adsorbed hydrogen is physically located beyond the outermost metal atoms; in the other, the hydrogen is embedded in the surface. They show that resistivity measurements and optical absorption measurements can be interpreted in terms of such a model, and they then derive detailed statistical thermodynamic relationships from the model.

The two chapters that presently seem remote from catalytic interest are that of R. F. Greene, who discusses the theory of hole and electron scattering at solid surfaces and the resulting influence on electrical conductivity, and that of J. N. Zemel, who discusses the solid state properties of epitaxial films of some IV/VI compounds.

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