

Book Review

Chemical Physics of Solids and Their Surfaces, Volume 7, Senior Reporters M.W. Roberts and J.M. Thomas, Specialist Periodical Reports, The Chemical Society, London, 1978, 184 pp. Price £ 22.50.

This is the seventh volume of a series previously entitled *Surface and Defect Properties of Solids*. The reason for the change is that some aspects of solid state chemistry are better described by the new title. It covers the recent literature published on the subjects reviewed up to mid-1977. The aim in the Specialist Periodical Reports is to give a systematic and comprehensive review of progress and to provide the general reader with a critical assessment of the advances reported.

The opening chapter is by A.C. McLaren on defects and microstructures in feldspars. The earlier report by Hutchinson, Jefferson and Thomas in Vol. 6 on electron microscopy applied to the study of minerals excluded feldspars. McLaren points out that the minerals of this group are probably the most important of all rock-forming substances since they make up between 50 and 60% of all igneous rocks and occur in a wide range of geological conditions.

The "atom—atom potential" approach in interpreting the behaviour of organic molecular crystals is taken up by S. Ramdas and J.M. Thomas. They point out that it is necessary to cope quantitatively with estimates of intermolecular energies and refer to the work of Kitaigorodsky and Williams who provided a relatively simple means for handling semi-empirically a wide range of problems that arise in the solid-state chemistry and physics of molecular crystals in general and of organic crystals in particular.

The characterization and properties of small metal particles is the title of the review by Y. Takaso and A.M. Bradshaw. As the editors point out in the preface, cluster chemistry is currently of great academic and industrial importance. They comment that, quite apart from the insight into bonding that these metal cluster carbonyl compounds afford, they show, in the partially decomposed state, catalytic activity used to produce, for example, the lower alcohols from mixtures of hydrogen and carbon monoxide.

The review article by P.G. Hall and C.J. Wright on neutron scattering from adsorbed molecules, surfaces and intercalates raises this subject for the first time in this series. The chapter by R.I. Bickley on photo-induced reactivity at oxide surfaces is largely concerned with zinc oxide and titania. Temperature-programmed desorption studies are reported in this review which could be repeated profitably on other oxide systems, a technique of increasing interest in thermal analysis.

Another technique which could supplement more conventional techniques in thermal analysis is that of reflection—absorption infrared spectroscopy by J. Pritchard. The infrared spectra of adsorbed species on metal surfaces was reviewed in the first volume of the series. The present review deals with carbon monoxide, nitrogen, hydrogen, nitric oxide and a selection of organic

molecules adsorbed on a variety of metal surfaces.

This is a well-presented volume, keeping up the high standard of previous volumes in the series and should provide valuable background information for those working in the thermal treatment of oxides and metals, especially where species are adsorbed at the surface.

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