Klaus Wandelt (Ed): Surface and Interface Science. Volume 5: Solid–Gas Interfaces I/Volume 6: Solid–Gas Interfaces II

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Bibliography

Surface and Interface Science.
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This book is part of a series of volumes aimed at reviewing the status of the field of surface science, with a broad overview of the present understanding of the chemistry and physics of interfaces. As put very elegantly by the editor in his preface, surfaces and interfaces are the first things we perceive with our senses: they consist of a series of gradients that “*drive spontaneous and man-controlled processes*” and are, therefore, of the utmost importance when discussing chemical reactivity and physical phenomena.

In these two volumes the specific field of gas–solid interfaces is discussed. A wide range of topics is covered and these are presented across the volumes in incremental complexity. The basics of gas adsorption are discussed at the beginning of Volume 5, and the discussion progresses through the behaviour of noble gases and small molecules on metallic substrates to a discussion of the catalytic activity of the latter. In Volume 6 more complex systems are discussed, including PAH adsorption on coinage metals, gas adsorption on less structurally defined surfaces (semiconductors and

metal oxides), and non-linear phenomena occurring at surfaces. A full chapter is devoted to statistical surface thermodynamics, and the volume ends with a review of the present advances in scanning probe manipulation of adsorbates on conductive surfaces.

The overall presentation is very clear, and the reader is efficiently guided through the vast amount of material presented, making the 1500 pages composing the two volumes relatively easy to follow and digest. I found particularly interesting and well-presented the discussion of gas adsorption on semiconducting and metal oxide surfaces, where the authors make an extremely good job at reviewing such complex systems and the chemical processes occurring at their interfaces. The last chapter, describing the manipulation of atoms and molecule with a scanning tunnelling microscope, is the only one that, in my opinion, would benefit from a more thorough discussion on the chemistry and the chemical reactions happening at the surface. A few paragraphs on the recent advances in tip-assisted chemistry and electrochemistry in the scanning probe environment would have greatly expanded the focus of the chapter, ensuring a more comprehensive discussion.

These volumes are clearly not designed as an introduction to the field, and a degree of knowledge of surface science is needed to follow the discussion. To the experienced scientist they represent a useful collection of important concepts supported by a vast bibliography, and I am sure that I will find myself consulting these books more than a few times over the next few years.

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