I found the breadth and detail of topics to be about right for undergraduate students of geochemistry, soil science and environmental chemistry, the disciplines targetted by the author. The emphasis of subject matter is also appropriate to general chemistry students. Difficult topics are often explained with simple analogies. The methodology in most cases is clear and concise with ample reference to original work where appropriate. In particular, it was pleasing to see sections devoted to 'predominance diagrams' and computer-based modelling of chemical equilibria in aqueous systems (Chapters 18 and 19). These topics are currently applied in prediction of groundwater chemistry and in environmental management and are likely to experience wider application in the future.

Overall, the text is nicely balanced and supported by clear and informative figures and tables of physical data. I believe that this will be recognised by students of chemical thermodynamics as an authoritative and readable text.

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Physics Chemistry and Technology of Solid State Gas Sensor Devices: A. MANDELIS and C. CHRISTOFIDES, Wiley, Chichester, 1993. Pages xxiii + 323. $58.00. ISBN 0-471-55885-0.

This book emphasises the basics of solid state sensor devices. It is highly recommended as a text book on this subject. The fundamental physics and chemistry of the detection mechanisms of the most important solid state gas sensor devices is given. Therefore this book gives the reader the opportunity to learn a really cross disciplinary scientific subject. The book can be recommended both as a text book for class room use or for self studies.

Semiconductor gas sensors, optical sensors, quartz crystal microbalances, surface acoustic wave sensors and finally pyroelectric sensors are covered in different chapters. The development and history is given for each kind of sensor. Advantages as well as limiting aspects are mentioned. The semiconductor gas sensors are the most diversified kind of sensors and this chapter describes gas sensors based on the field effect, such as capacitors, transistors and MIS diodes as well as semiconducting sensors where the gas induces a change in conductivity. Taguchi sensors and the zinc dioxide sensors are the most common examples of these kind of sensors, though many others are also described. The outline of the chapter stresses similarities and differences in a very good way between this fairly wide range of different sensors. Chapters four and five cover photonic, photoacoustic and fiber-optic sensors and again the layout gives both a good understanding of the different sensor principles and also a good comparison between different kinds of optical gas sensors. Chapter six deals with the quartz crystal microbalance sensors for gas detection. Surface acoustic wave sensors are covered in the next chapter and finally in chapter eight the pyroelectric gas sensors are described and discussed in a thorough way.

In chapter two the physics and chemistry of interaction of gases with surfaces is described from a catalytic point of view. The authors focus on hydrogen as a model gas molecule. In the last chapter a comparison of the hydrogen response of the solid state gas sensors is given. Hydrogen is the most commonly used test gas in the development of solid state sensors and hence the interaction with hydrogen is very suitable for a comparison of different kinds of solid state sensors.

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