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BOOK REVIEW

Adsorption Engineering. By M. SUZUKI. Elsevier, Amsterdam/New York, 1990. 295 pp. $139.

This book is written by Professor Motoyuki Suzuki of the University of Tokyo, who has made original and important contributions to the field of separation and purification by adsorption and is well-respected in that community. The book covers the fundamental aspects of adsorption for the purposes of separation and purification of gas and liquid mixtures—except the last chapter, which deals with applications of adsorption for cooling from solar energy and heat pump.

The book is quite original; it covers many aspects and angles that have not appeared in previous books on the same subject (including the one written by this reviewer). A unique feature is that it introduces the readers to some significant Japanese literature in the field which is not readily available to the rest of the world. The book is a must for researchers and practitioners in the field of adsorption/separation.

The book contains 12 chapters—Chapter 1 is a brief three-page chapter. In this reviewer's opinion, the following chapters are of direct use to the catalysis community: Chapter 2 (Porous Adsorbents), Chapter 3 (Adsorption Equilibrium), Chapter 4 (Diffusion in Porous Particles), and Chapter 6 (Kinetics of Adsorption in a Column—Chromatographic Analysis). The other chapters, which are not reviewed here, are (in abbreviated terms): Chapter 5 (Batch Adsorbers), Chapter 7 (Breakthrough Curves), Chapter 8 (Heat Effects in Adsorbers), Chapter 9 (Sorbent Regeneration), Chapter 10 (Chromatographic Separation), Chapter 11 (Pressure Swing Adsorption), and Chapter 12 (Energy Transport).

In Chapter 2, a brief review is given to the industrial sorbents. The distinguishing feature of this chapter is the excellent discussion on techniques to measure and calculate the pore size distribution of micropores (below 10-Å diameter). Chapter 3 reviews selected isotherms for single and mixed gases. An extended discussion is given to the Dubinin–Astakhov equation; however, the (separate) work of Stoeckli and Jaroniec on the same subject is not included and should be read along with this chapter. The major portion of Chapter 4 is on surface diffusion. The discussion is short, but elegant, and most informative to readers who are not familiar with the subject. Chapter 6 is on chromatographic analysis. The author writes with authority on the method of moments: how to extract equilibrium isotherm and transport information from chromatographic elution curves. This chapter is an excellent review of the method of moments.

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