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A Review of "Handbook of Monochromatic XPS Spectra: The Elements and Native Oxides. B. Vincent Crist, xxviii + 519 pp. John Wiley & Sons, 2000; ISBN 0-471-49265-5; \$535.00."

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Book Review

Handbook of Monochromatic XPS Spectra: The Elements and Native Oxides.
B. Vincent Crist, xxviii + 519 pp. John Wiley & Sons, 2000; ISBN
0-471-49265-5; \$535.00.

X-ray photoelectron spectroscopy (also known as "ESCA") continues to be important analytical technique for determining elemental composition and chemistry of surfaces. This handbook by Crist is one of three related volumes compiling data taken in the author's laboratory. The other two are entitled *Handbook of Monochromatic XPS Spectra: Polymers and Polymers Damaged by X-rays* and *Handbook of Monochromatic XPS Spectra: Semiconductors*. Although related XPS handbooks have been published by, or in collaboration with, surface science instrument manufacturers, this book has several important features that will make it desirable for researchers involved in acquiring and/or interpreting XPS spectra.

This volume is divided into three sections. The introduction describes experimental parameters used in acquiring the spectra and the binding energy calibration procedure. The detailed discussion provided by the author is appropriate and crucial to this type of reference book. The second and third sections display spectra of the elements and selected metal oxides acquired in the author's laboratory over a period of several years.

An important aspect of this handbook is that it provides not only survey spectra in which all peaks (including Auger and satellite losses) are clearly labeled, but also a detailed composition table. This table provides raw data not typically presented in other handbooks. These include experimental and corrected binding energies, sensitivity factors, peak areas and atomic percentages. Also included for each element and oxide are high resolution spectra of selected regions along with their deconvolutions. The binding energies, widths and areas are included for each deconvoluted component. Perhaps the most unique feature of this volume is that it also presents X-ray induced valence band region for most of the metals. Unfortunately, similar data are not presented for the native oxides.

The compiled spectra appear to have been photographed directly from the pages printed on the laboratory computer, and the handbook is essentially a col-

lection of very carefully performed experiments. This results in the reader obtaining data that has not been overly massaged or manipulated, but the legibility of the labeling on a few of the spectra is marginal. Furthermore, this book provides very little background on XPS and, unlike related handbooks, will not serve as a general introduction to the technique.

Overall this is an excellent reference book. Its intended audience is clearly surface and materials scientists who routinely perform XPS studies. For these researchers, and those interested in metal oxide chemistry, this handbook will prove to be extremely valuable.

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