

BOOK REVIEW

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Review of: *Forensic Chemistry*

REFERENCE: Bell S. *Forensic chemistry*. Upper Saddle River: Pearson-Prentice Hall; 2006.

Suzanne Bell has written an excellent introduction to forensic chemistry in a book applicable to a one or two semester college course or to workers already in the field. The operative word here is chemistry, and she doesn't shy away from its application to a wide range of forensic topics. The forensic areas covered range from drug analysis and pharmacokinetics to explosives and accelerants to inks and paints to polymers and fibers. In most of her 14 chapters, she introduces chemical methods of analysis, clear chemical formulae, and structures of the substances under study, description of state-of-the-art analytical instrumentation widely used, sample collection and handling, and even primers about how modern forensic evidence is often presented to juries.

As an analytical chemist I can write to you that the sections introducing separation science, from thin layer chromatography through GC/MS to capillary electrophoresis, are particularly well done; they are replete with clear, line-drawn examples of how field samples are extracted and prepared for analysis, how the instrument is used, and how the data is handled and analyzed. These visuals for chemical extraction procedures, functions of complex instrumentation, sample structure and handling, and even schematics of how combustion reactions proceed (for instance) are some of the best I have seen in any science textbook. The instrumentation chapter alone introduces microscopy, including microspectrophotometry, spectroscopy, elemental analysis, separation methods, and chemical derivatization among others. Though these tools are introduced in Chapter 5, data presentation and explication of these instrumental methods is spread throughout the subsequent chapters in the forensic areas detailed above.

Also very important for forensic chemistry students and found here are strong introductions to data statistics from sampling statistics to principle component analysis to calibration limitations and the use of internal standards. Offset boxes—entitled “Applying the Science,” “Historical Evidence,” or “Exhibit A” (or “B,” or “C,” or “D”) and containing cogent examples often with real sample data—break the flow of text throughout each chapter. Yet the writing needs little of this type of student-pleasing relief because the author has written in a very clear, matter-of-fact yet

authoritative manner that will be easy for college juniors or seniors to understand. References are numerous—far more frequent than in the most widely used instrumental chemical analysis text in the U.S.—but kept collected at the end of each chapter. Also there are always a few end-of-chapter problems, important terms, and suggestions for up-to-date further readings. The index is likewise very good: for instance, there are nine index entries for marijuana, 18 for gunshot residue, and 24 for explosives.

Though most of the book's, layout is in black and white and gray scale, the text doesn't seem to me to suffer from lack of color. The many included photographs—of forensic and drug samples, people, and even historical personalities—are well represented in black and white. A small section of 16 color images are included, however. The general lack of color seems to be of little consequence except to keep down the price of the text: it's \$114 on-line. My freshman chemistry text is \$148, and my instrumental text \$127. Another cost-saving feature is the inclusion of some of the appendix table/data on-line, instead of in the text. This allows it to be updated and expanded yet still available to almost all students. If worse comes to worse an instructor could always print from the web and hand out these supplementary data to students who are without Internet access (how many of those are there?).

The author's career experiences strongly establish her credentials for writing this text: she has a dual B.S. in chemistry and police science, an M.S. in forensic science, and a Ph.D. in chemistry. She has started, with others, a forensic chemistry program at Eastern Washington University and has written other books in the field. Her preparation for writing this text is broad, and it shows in the topics chosen, the writing, and the teaching, history, evidence, and images that support her topics.

The last, possibly most important consideration is the necessary preparation of students for a course using this text. This is *not* a nonscience majors textbook. While it *is* an excellent introduction to forensic chemistry, it is not an introduction to chemistry, and students approaching this text and its course should be college juniors at a minimum and have successfully passed all the way through quantitative analysis and a year of organic.

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