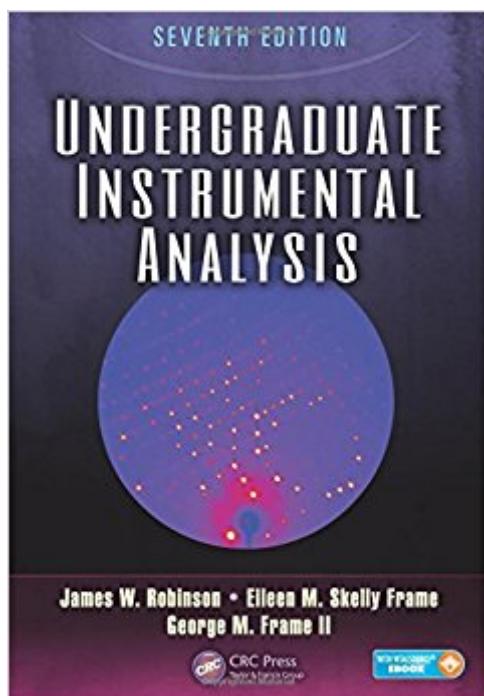


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# Undergraduate Instrumental Analysis, Seventh Edition



## Synopsis

Crucial to research in molecular biology, medicine, geology, food science, materials science, and many other fields, analytical instrumentation is used by many scientists and engineers who are not chemists. Undergraduate Instrumental Analysis, Seventh Edition provides users of analytical instrumentation with an understanding of these instruments, covering all major fields of modern instrumentation. Following the tradition of earlier editions, this text is designed for teaching undergraduates and those with no analytical chemistry background how contemporary analytical instrumentation works, as well as its uses and limitations. Each chapter provides a discussion of the fundamental principles underlying the techniques, descriptions of the instrumentation, and numerous applications. The chapters also contain updated bibliographies and problems, and most have suggested experiments appropriate to the techniques. This completely revised and updated edition covers subjects in more detail, such as a completely revised x-ray chapter, expanded coverage of electroanalytical techniques, and expansion of chromatography and mass spectrometry topics to reflect the predominance of these instruments in laboratories. This includes state-of-the-art sample introduction and mass analyzers, and the latest developments in UPLC and hyphenated techniques. The book also contains new graphics and addresses several new topics: Ion mobility spectrometry Time domain NMR (relaxometry) Electron spin resonance spectroscopy (ESR, EPR) Forensic science and bioanalytical applications Microcalorimetry and optical thermal instruments Laser-induced breakdown spectroscopy (LIBS) This text uniquely combines instrumental analysis with organic spectral interpretation (IR, NMR, and MS). It provides detailed coverage of sampling, sample handling, sample storage, and sample preparation. In addition, the authors have included many instrument manufacturers' websites, which contain extensive resources.

## Book Information

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## Customer Reviews

James W. Robinson earned his B.Sc. (Hons), PhD, and D.Sc. from the University of Birmingham, England. He is professor emeritus of chemistry, Louisiana State University, Baton Rouge, Louisiana. A fellow of the Royal Society of Chemistry, he is the author of 250 professional papers, book chapters, and several books including *Atomic Absorption Spectroscopy* and *Atomic Spectroscopy*, first and second editions. He was editor in chief of *Spectroscopy Letters* and the *Journal of Environmental Science and Health* (both Marcel Dekker, Inc.); executive editor of *Handbook of Spectroscopy* Vol. 1 â€“ 1974, Vol. 2 â€“ 1974, Vol. 3 â€“ 1981; and *Practical Handbook of Spectroscopy* • 1991 (all CRC Press). He served on the National University Accreditation Committee from 1970-1971. He was a visiting distinguished professor at University of Colorado â€“ 1972 and University of Sydney, Australia â€“ 1975. He served as the Gordon Conference Chairman in Analytical Chemistry â€“ 1974. Eileen M. Skelly Frame heads a private consulting company, Full Spectrum Analytical Consultants and is Adjunct Professor, Department of Chemistry and Chemical Biology, Rensselaer Polytechnic Institute, Troy, New York. Dr. Skelly Frame has extensive industrial experience in the use of instrumental analysis to characterize a wide variety of substances, from biological samples and cosmetics to high-temperature superconductors, polymers, metals, and alloys. She is a member of the American Chemical Society and ASTM International. Dr. Skelly Frame earned her BS in chemistry from Drexel University, Philadelphia, Pennsylvania, and her PhD in analytical chemistry from Louisiana State University, Baton Rouge. George M. Frame II is a retired scientific director, Chemical Biomonitoring Section of the Wadsworth Laboratory, New York State Department of Health, Albany and is a private consultant. He has a wide range of experience in analytical chemistry and has worked at GE Corporate R&D Center, Pfizer Central Research, U.S. Coast Guard R&D Center, Maine Medical Center, and in the United States Air Force Biomedical Sciences Corps. He is a member of the American Chemical Society. Dr. Frame earned his AB in chemistry from Harvard College, Cambridge, Massachusetts, and his PhD in analytical chemistry from Rutgers University, New Brunswick, New Jersey.

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