



# Undergraduate Instrumental Analysis, Seventh Edition

By James W. Robinson, Eileen Skelly Frame, George M. Frame II

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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

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