## **Book Description:**

The main topics in analytical chemistry are dealt with gravimetric analysis, volumetric analysis, separation and purification techniques, data analysis, thermoanalytical methods and various types of spectroscopy. Detailed discussions on new spectro analytical techniques, polarimetry, laser techniques, Mossbauer spectroscopy and fluorescence spectroscopy are presented. The main objective is to introduce students to existing methods of analysis, new techniques, their instrumentation and mainly their applications, giving them an insight into this challenging and fascinating field. This book will serve as a text for students of M. Sc. chemistry. In addition, it can serve as a convenient reference for B. Sc. chemistry students and for those taking up competitive entrance examinations.

## **Table of Contents:**

Preface	iii
Acknowledgements	iv
Chapter 01: Introduction to Analytical Chemistry	01
Chapter 02: Analysis and Reporting of DATA	18
Chapter 03: Separation and Purification Techniques	53
Chapter 04: Principles of Volumetric Analysis	111
Chapter 05: Principles of Gravimetric Analysis	161
Chapter 06: Thermoanalytical Methods	191
Chapter 07: Electroanalytical Methods	222
Chapter 08: Polarimetry	295
Chapter 09: Spectroanalytical Techniques: Atomic Absortion Spectroscopy Flame Emission Spectrometry	y, 306
Chapter 10: Fluorescence Spectroscopy	323
Chapter 11: Infrared Spectroscopy	343
Chapter 12: Raman Spectroscopy	363
Chapter 13: Absorption Spectroscopy	378
Chapter 14: Nuclear Magnetic Resonance Spectroscopy	395
Chapter 15: Electron Spin Resonance Spectroscopy	416

Chapter 16: Mass Spectrometry	436
Chapter 17: Laser Techniques	470
Chapter 18: Mossbauer Spectroscopy	485
Chapter 19: X-Ray Techniques	508
Chapter 20: Isotopic Analytical Methods	540
Appendix List of Elements in the Increasing Atomic Numbers	578
References	580
Index	581

## Author:

**Dr. R. Gopalan** retired as Head of the Department of Chemistry, Madras Christian College, Chennai. He obtained his Ph. D. from the University of Madras and went on to do his postdoctoral research at Baylor University, USA. He has 35 years of experience in teaching and research and was awarded a UGC Emeritus Fellowship on his retirement. He has published 45 research papers, many articles on popular science and education and 30 books for M. Sc. , B. Sc. and school courses. He was the principal investigator for a research project Chemical Decontamination of Nuclear Reactor Heat Transfer Units – funded by the BRNS, Department of Atomic Energy of India. He is currently honorary secretary for two schools and Director, Sri Malolan College of Arts and Science, Madurantagam.

**Dr. K S Viswanathan** is currently Professor and Head, Department of Chemical Sciences, IISER Mohali. He earned a Ph. D. in Chemistry under the guidance of Professor Joel Tellinghuisen at Vanderbilt University, USA in 1983. He went on to do his postdoctoral research at Indiana University, USA. He spent the next 25 years at IGCAR, DAE, Kalpakkam, before joining IISER Mohali. His field of research involves the study of the infrared spectroscopy of molecules trapped in a solid inert gas matrix. His research also includes developing techniques for trace level detection of lanthanides and actinides. He has published several research papers in international peer-reviewed journals.