

Preface

As with previous editions of this textbook, *Radiopharmaceuticals in Nuclear Pharmacy and Nuclear Medicine, Fourth Edition*, provides a comprehensive introduction to radiopharmaceuticals and their applications in nuclear medicine. With the increasing emphasis on PET and the expanding role of theranostics, the nuclear medicine community continues to grow as evidenced by the development of several new radiopharmaceuticals and technologies for diagnostic and therapeutic applications in recent years. The book is intended for use in courses taught in the disciplines of nuclear pharmacy, nuclear medicine technology, and nuclear medicine. The chapter topics are of moderate depth and breadth and are referenced to the primary literature. As such, this textbook has become a useful resource for professional practitioners in these disciplines and for those preparing for specialty board examination.

The textbook is organized in six primary sections. The first section, *Introductory Materials*, sets the stage for the role of nuclear medicine as a diagnostic tool (Chapter 1) and introduces the reader to the historical development of the nuclear pharmacy specialty (Chapter 2). Section 2, *Physics and Radiation Safety*, discusses fundamental concepts of radiation physics, radiation safety, and radiation biology (Chapters 3–8). Section 3, *Radiopharmaceutical Chemistry*, focuses on general review of basic concepts, technetium agents, and non-technetium agents, with emphasis on preparation and dispensing of radiopharmaceuticals (Chapters 9–11), and includes a completely updated chapter on the chemistry of PET agents (Chapter 12). Section 4, *Nuclear Pharmacy Practice Considerations*, covers topics in nuclear pharmacy practice, radiopharmaceutical preparation, quality control, and preparation issues (Chapters 13–15), and includes two completely new chapters: one focusing on radiolabeling of blood products (Chapter 15) and another on manufacturing and distribution of PET radiopharmaceuticals (Chapter 17). Section 5, *Regulatory Considerations*, focuses on the regulatory control of radiopharmaceuticals from the FDA and NRC perspectives (Chapters 18 and 19). The concluding section 6, *Clinical Applications*, discusses the diagnostic and therapeutic applications of radiopharmaceuticals used in nuclear medicine practice (Chapters 20–33).