**Nuclear Medicine Instrumentation, Second Edition**

**By Jennifer Prekeges**

**Transition Guide**

• **Chapter 2** – there is a new concept map elucidating the operation of a scintillation detector, a better description of calibration, and clarification of energy resolution (the property being measured) vs. FWHM ( the mechanism by which it is measured).

• **Chapter 5** – the section on non-Anger cameras was rewritten to address planar devices only, with descriptions of non-Anger SPECT systems in Chapter 12.

• Chapter 8 – the sections on background and noise have been rewritten.

• **Chapter 10** – the description of SPECT axes was changed to match that used for other types of tomographic imaging systems.

• **Chapter 12** – this chapter was updated to include recent improvements, a section on noise regularization, and more information on implementation and clinical benefits. Both software methods of incorporating improvements and non-Anger 3D imaging systems are discussed.

• **Chapter 15** – photos of a PET tomograph taken apart are included, so that the reader can see crystals, septa, electronics, and a rod source. The description of direct and cross-planes is expanded. There is decreased emphasis on 2D vs 3D imaging, and new sections on dynamic and gated imaging and organ-specific PET systems are included.

• **Chapter 16** – the section on the SUV is rewritten to reflect its increasing importance, and a new section on the benefits of time-of-flight PET is included.

• **Chapter 19** – this is completely new chapter on MRI, written as the first PET/MRI scanners are coming into clinical use. It aims to provide a modest rather than in-depth level of understanding of MRI as well as the technological challenges and clinical benefits of combining MRI with PET imaging.

• **Appendix A** – extensively rewritten to emphasize the consequences of radiation interactions.

• **Appendix F** – a new appendix on laboratory accreditation; references to the requirements of accrediting agencies are also sprinkled throughout the text as appropriate.