
Labelling of Small Biomolecules Using Novel Technetium-99m Cores

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Despite the inarguable contributions and promise of PET, ^{99m}Tc remains the workhorse of clinical nuclear medicine imaging. Indeed, generator-based single-photon radiopharmaceuticals appear to have a future because of their relatively low cost and global availability, combined with improved imaging technology. However, advances in the chemistry for incorporating ^{99m}Tc into true biomolecular tracers are critical to this future.

This book, report 459 in the IAEA technical series, provides current insight into the status of novel ^{99m}Tc coordinating cores for biotracer labeling. The report represents the culmination of activities starting with an IAEA consultants meeting and a subsequent coordinated research project organized by the Division of Physical and Chemical Sciences under the guidance of Dr. M.R.A. Pillai. There are 2 parts. The first, a single chapter, provides a 30-page overview of the coordinated research project. It includes a review of ^{99m}Tc cores, a summary of compounds to be investigated as part of the coordinated research project, a summary of the outcomes, and a concluding statement.

Reports by the participants in the coordinated research project are presented in part II. Each chapter (report) is formulated as a journal-based scientific publication complete with experimental design, methodology, results and data analysis, and literature citations. ^{99m}Tc -tricarbonyl, mono/di/tridentates, hydrazinonicotinamide, and nitrido cores are reported in studies that include RGD peptides, annexin V fragments, fatty acids, quinazolines, and glucose.

A participant list and a list of relevant publications by the members of the coordinated research project are appended. This is an excellent teaching and reference volume for radiopharmaceutical scientists and for nuclear physicians with an interest in radiopharmaceutical design and evaluation. Part I provides an excellent but simple review and overview of coordinating ^{99m}Tc cores for molecular labeling; part II goes on to show how it is done for those who want an in-depth appreciation of the work.

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