



POSITION DESCRIPTION

Position Title:	Synthetic Medicinal Chemist
Cluster / Business Unit / Division	Nuclear Science and Technology
Section or Unit:	Health Research and Technology Group
Classification:	Band 6
Job Family:	Research
Position Description Number:	PD-2603
Work Contract Type:	Professional
STEMM/NON-STEMM:	STEMM
STEMM CATEGORY:	Science

POSITION PURPOSE

The Synthetic Medicinal Chemist will lead the design, synthesis, purification, and characterisation of ^{10}B -enriched and ^{18}F -labelled neutron capture agents, contributing to the discovery and translational pipeline of the NCEPT program. The position focuses on medicinal and organic synthesis, radiolabelling, and method development to generate novel, clinically relevant compounds for preclinical and clinical evaluation. The role underpins the chemistry stream of NCEPT, developing novel boron- and fluorine-labelled compounds for targeted neutron capture therapy applications.

ORGANISATIONAL ENVIRONMENT

ANSTO is a leading global nuclear science and technology organisation delivering world class research and expertise to benefit Australia and support a more sustainable future. Using nuclear science, we improve health, support industries, provide expert advice to government on nuclear technologies and help develop Australia's nuclear workforce.

Nuclear Science & Technology (NST) incorporates ANSTO's research, innovation, landmark research infrastructure and associated platforms and capabilities. NST conducts research and development in relation to nuclear science and technology and connects people, transfers knowledge, and provides nuclear-based products and services for the benefits of Australia.

The Health Research and Technology Group (NST Health) develops nuclear medicine products and technologies, including advanced radiotherapies, to address areas of unmet clinical need, and applies nuclear science and technology to address health challenges linked to chronic disease. The group maintains core capabilities in radiochemistry, radiobiology, preclinical imaging and radiation physics. NST Health collaborates and partners with academia, the pharmaceutical industry, research clinicians, and hospitals.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities

- Design and synthesise novel ^{10}B -enriched compounds, including amino acid analogues and derivatives for neutron capture applications.
- Develop and optimise synthetic routes for scale-up production and purification of target molecules.
- Conduct ^{18}F -radiolabelling and characterisation of compounds using quantitative methods (such as HPLC, NMR, MS, and PET tracers).
- Collaborate with radiobiologists and physicists to evaluate compound uptake, biodistribution, and radiobiological performance.

- Maintain accurate laboratory records and ensure compliance with safety, quality, and radiation protection standards.
- Operate and maintain analytical and radiochemistry instrumentation, including ensuring calibration and quality control.
- Contribute to academic supervision of postgraduate and undergraduate students, preparation of scientific manuscripts, and presentation of research outcomes at national and international conferences.
- Liaise with domestic and international collaborators to coordinate compound development, data sharing, and dissemination of research findings.
- Contribute to IP generation, patent documentation, and publication of research outcomes.
- Support project milestones and reporting requirements in collaboration with domestic and international partners.
- Supervise or mentor early career staff and students working within the NCEPT chemistry stream.
- Liaise with regulatory and compliance stakeholders, including Radiation Protection Services and relevant quality-assurance bodies, to ensure all laboratory and radiochemical activities meet statutory and ANSTO requirements.
- Undertake additional duties as required and during period of leave of other staff.

Decision Making

- Provide input to resource planning and procurement to ensure efficient delivery of research activities and alignment with milestones.
- Works within a framework of ANSTO governance, NST research strategy, and project plans, exercising professional discretion in the design, synthesis, and analysis of novel compounds.
- Determines work priorities, methodologies, and experimental parameters independently, in alignment with agreed project objectives, safety standards, and resource constraints.
- Consults with the Research Leader on complex or high-impact matters such as resource allocation, technical risk, or IP-sensitive decisions that may influence milestones or partner deliverables.
- Accountable for the integrity, traceability, and reproducibility of experimental data and adherence to ANSTO's safety, ethical, and quality management systems.
- Makes evidence-based judgements under uncertainty or when balancing competing technical and operational priorities.
- The levels of authority delegated to this position are those approved and issued by the Chief Executive Officer. All delegations will be in line with the ANSTO Delegation Manual AS-1682 (as amended or replaced).

Key Challenges

- Developing novel boron- and fluorine-labelled compounds with optimised tumour uptake and stability.
- Balancing exploratory synthesis with project milestone deadlines.
- Managing complex analytical workflows within a multi-disciplinary research team.
- Ensuring reproducibility and scalability of compound synthesis for translational applications.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Research Leader (Manager)	• Receive direction, align project milestones, and report on synthesis outcomes.

Radiobiology and Medical Physics Peers (HRTG)	Coordinate compound evaluation, dosimetry correlation, and in vitro / in vivo evaluation and validation.
NST / ANSTO Research Platforms	- Coordinate ion-beam irradiations and dosimetry supporting chemistry-to-biology translation. - Plan and execute neutron-based characterisation/irradiations relevant to NCEPT chemistry. - Ensure laboratory operations and compliance with safety and radiation protection requirements.
External	
University collaborators	Joint design/synthesis programs, data sharing, method transfer and publications.
International research facilities	Radiolabelling transfer, beamline validation and international dissemination.
Clinical partners	Input on translational priorities and clinical feasibility.
HDR and undergraduate students (domestic & international)	Co-supervision and research training aligned to NCEPT objectives.

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the Research Leader
Direct Reports	Nil
Indirect Reports	Nil

Financial Data (2025-2026)	
Revenue / Grants	N/A
Operating Budget	N/A
Staffing Budget	N/A
Capital Budget	N/A
Assets	N/A

Special / Physical Requirements	
Location:	Lucas Heights Working in different areas of designated site/campus as needed
Travel:	Domestic and international travel may be required to partner laboratories or beamline facilities for experimental coordination, validation, and collaboration.
Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) Laboratory-based physical requirements (standing for long periods, handling chemicals and radioactive materials under controlled conditions).
Radiation areas:	May be required to work in radiation areas under tightly regulated conditions Perform duties in an area where radioactive materials are handled under tightly controlled safety conditions Perform duties with and in an area where hazardous chemicals or materials are handled under tightly controlled safety conditions
Hours:	Willingness to work extended and varied hours based on operational

	requirements After hours work may be required for short and infrequent periods
Clearance requirements:	Satisfy ANSTO Security and Medical clearance requirements Obtain and maintain appropriate federal government clearance

Workplace Health & Safety

Specific role/s as specified in AP- All Workers

2362 of the ANSTO WHS Management System Other specialised roles identified within the guideline a position holder may be allocated to in the course of their duties

KNOWLEDGE, SKILLS AND EXPERIENCE

1. PhD (or equivalent) in Medicinal Chemistry, Organic Chemistry, Radiochemistry, or a related discipline.
2. Demonstrated experience in multi-step organic synthesis, purification, and characterisation (HPLC, NMR, MS).
3. Proven experience in radiolabelling chemistry (e.g., ^{18}F) and compound stability analysis.
4. Experience working with isotopic or radiochemical techniques in medicinal or pharmaceutical R&D.
5. Strong understanding of radiation safety and quality systems in chemical or radiochemistry laboratories.
6. Experience supervising or mentoring postgraduate students and early career researchers.
7. Demonstrated ability to deliver research outputs to schedule, including peer-reviewed publications and conference presentations.
8. Excellent written and verbal communication skills, including technical documentation, scientific reporting, and collaboration across disciplines.
9. Ability to work independently and exercise sound scientific judgement within complex regulatory and multidisciplinary environments.

Desirable:

1. Experience developing boronated or fluorinated agents for theranostic or neutron-capture applications.
2. Familiarity with GMP, GLP, or ISO-compliant laboratory practices.
3. Proven success engaging with clinical or industrial collaborators.
4. Understanding of intellectual property and data stewardship in translational research.
5. Experience contributing to competitive grant applications or multi-partner research programs.

VERIFICATION

Line Manager		Delegated Authority	
Name:	Mitra Safavi-Naeini	Name:	Ryan Middleton
Title:	Research Leader	Title:	Co-Director, Health Research and Technology Group
Signature:		Signature:	
Date:		Date:	