

## POSITION DESCRIPTION

<b>Position Title:</b>	Medicinal Chemist – Mass Spectrometry
<b>Cluster / Business Unit / Division</b>	NST/ Research Infrastructure
<b>Section or Unit:</b>	National Deuteration Facility
<b>Classification:</b>	Band 7
<b>Job Family:</b>	Science
<b>Position Description Number:</b>	PD-2197
<b>Work Contract Type:</b>	Science
<b>STEMM/NON-STEMM</b>	STEMM

---

### POSITION PURPOSE

The Medicinal Chemist – Mass Spectrometry (a) maintains and operates the NDF's Liquid Chromatography (LC) and Gas Chromatography (GC) -Mass Spectrometer (MS) systems and manages the associated workflow and research activities utilising these instruments (b) provides subject matter expertise to NDF staff and external users, including industry, for MS analysis of small organic molecules in biological applications (e.g., pharmaceutical, healthcare products) (c) troubleshoots high complexity MS analyses of other molecule classes already undertaken by existing staff and (d) develops new applications requiring deuterium labelling for MS investigations. The position undertakes capability development programs to improve the delivery of new and existing deuterated molecules for research and commercial users by initiating and undertaking research investigations and supervising research students.

### ORGANISATIONAL ENVIRONMENT

ANSTO leverages great science to deliver big outcomes. We partner with scientists and engineers and apply new technologies to provide real-world benefits. Our work improves human health, saves lives, builds our industries and protects the environment. ANSTO is the home of Australia's most significant landmark and national infrastructure for research. Thousands of scientists from industry and academia benefit from gaining access to state-of-the-art instruments every year.

ANSTO is the national organisation for nuclear science and technology. We focus on undertaking leading edge research, delivering innovative scientific services and providing specialised advice to government, industry, academia and other research organisations. Nuclear Science & Technology (NST) incorporates ANSTO's research, innovation, research infrastructure and associated platforms and capabilities. NST conducts research and development related to nuclear science and technology and connects people, transfers knowledge and provides nuclear-based products and services for the benefit of Australia.

Research Infrastructure includes a portfolio of scientific assets, infrastructure, capability development & delivery for multi-disciplinary, multi-user platforms for a collaborative user community and for internal research and development endeavours. The National Deuteration Facility (NDF) is Australia's national facility for isotopic labelling of molecules with the stable, non-radioactive isotope deuterium using chemical or biological processes in order to enhance contrast, and reduce background when conducting structural studies using neutron scattering instrument operated by the Australian Centre for Neutron Scattering at the OPAL Reactor, or using spectroscopic techniques such as Nuclear Magnetic Resonance (NMR), Infra-Red (IR) or Mass Spectrometry (MS).

The NDF is a world leader in chemical deuteration and equal to the benchmark for Biodeuteration. It is the only facility of its kind in southern hemisphere and has an oversubscribed user program with greater than

150 users from 30 institutions per year benefiting from the NDF's capabilities. The NDF has significant international engagement with institutions in Europe, Asia and the U.S.A.

## **ACCOUNTABILITIES & RESPONSIBILITIES**

### **Key Accountabilities**

The key accountabilities for this position include:

- Provide scientific leadership and expert knowledge to ensure the effective development and deployment of deuterium labelling in medicinal chemistry for mass spectrometry applications.
- Provide scientific expertise in LC-MS/MS and GC-MS analysis of deuterated molecules and their kinetic isotope effect in medicinal chemistry as analysed by MS techniques.
- Design and execute experiments to profile metabolomic content of deuterated samples using GC-MS and LC-MS.
- Conduct routine production of deuterated molecules, evaluate, validate and execute new and improved production methods for supply to MS and medicinal chemistry users.
- Present and summarise scientific findings in reports and presentations, and prepare and submit manuscripts to peer-reviewed scientific journals for publication.
- Develop and contribute to platform research programs to deliver new or improved capabilities aligned with current user needs.
- Review and advise on scientific/technical aspects of proposed research and development projects submitted through the ANSTO Research Portal.
- Provide specialised scientific/technical leadership, mentoring and professional advice to team members, collaborators, partners, users, students and management. This may include participation in NST research theme projects and other platform projects.
- Engage with industry to secure commercial revenue opportunities and develop collaborative relationships aligned with platform, NST and ANSTO objectives.
- Develop, and use existing, NDF protocols to produce partly deuterated or perdeuterated molecules using chemical and biochemical techniques.
- Undertake the purification and characterisation of the deuterated molecules.
- Provide assistance to NDF clients in NDF proposal preparation, conduct technical and safety evaluations of proposals, participate in scientific refereeing of deuteration proposals, and liaison with clients regarding progress and completion of approved proposals
- Supervise research students and provide expertise in the use of LC-MS and chromatography systems to users and students.
- Undertake additional duties as required and during period of leave of other staff.

### **Decision Making**

- The position works within a framework of legislation, policies, professional standards and resource parameters. Within this framework the position has some independence in determining how to achieve individual objectives, including deciding on the design and approval of projects in the role portfolio.
- The ANSTO values, organisational corporate plan, business plan, operational excellence program, the NSTLI strategy and Research Infrastructure & NDF objectives provide the context for the position.
- The position is fully accountable for the accuracy, integrity and quality of the content of advice provided, and is required to ensure that decisions are based on sound evidence, but at times

maybe required to make effective judgements under pressure or in the absence of complete information or expert advice.

- Determine key work priorities within the context of agreed work plans and will consult with the platform leader on issues that have an impact on the NDF.
- 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

- Building effective and productive networks across ANSTO and externally
- Conversion of technical success in deuteration into high value outcomes including journal publications of high quality – frequently requiring motivating clients to take projects through to completion.
- Appropriately balancing responsibilities as the custodian of the NDF mass spectrometry systems and contributing as a researcher.
- Ensuring the successful implementation of the NDF strategy in functional materials utilising deuteration whilst managing conflicting priorities and deadlines.
- Develop competence in MS applications as applied to structure/function and kinetic isotope effect investigations.
- Perform metabolomic analyses on MS datasets to test biological assays that utilise deuterated molecules.

### KEY RELATIONSHIPS

Who	Purpose
<b>Internal</b>	
NDF Leader	Purpose: <ul style="list-style-type: none"> <li>• Receive guidance and direction</li> <li>• Recommend and gain endorsement for plans and goals and other initiatives.</li> <li>• Report on progress of NDF deuteration proposals</li> <li>• Provide expert, authoritative and evidence based information and advice on safety and quality aspects of the NDF's operations.</li> </ul>
Deuteration Team members	Purpose: <ul style="list-style-type: none"> <li>• Provide expert advice and analysis on a full range of matters</li> <li>• Contribute to group decision making processes, planning and goals</li> <li>• Collaborate and share accountability</li> <li>• Engage to monitor revenue trends and evaluate further support which may be required to ensure delivery against the plan</li> <li>• Negotiate and resolve conflicts</li> </ul>
ANSTO Scientists & facility users	<ul style="list-style-type: none"> <li>• Provide advice and analysis</li> <li>• Collaborate and contribute to research projects</li> <li>• Understand user requirements and desired outcomes</li> <li>• Provide training, guidance &amp; supervision while utilising facilities, ensure compliance with safety, quality and applicable legislation and regulation</li> </ul>
<b>External</b>	
Facility users and collaborators from University, public and commercial R&D sectors	<ul style="list-style-type: none"> <li>• Build &amp; maintain relationships and stimulate interest in deuteration and in the research community</li> <li>• Provide advice and analysis</li> </ul>

- Collaborate and contribute to research projects
- Understand user requirements and desired outcomes
- Provide training, guidance & supervision while utilising facilities, ensure compliance with safety, quality and applicable legislation and regulations
- Collaborate to deliver client focused results and provide scientific expertise

## POSITION DIMENSIONS

<b>Staff Data</b>	
Reporting Line	Reports to the NDF-Leader
Direct Reports	Nil
Indirect Reports	Nil
<b>Financial Data (2021/2022)</b>	
Revenue / Grants	N/A
Operating Budget	N/A
Staffing Budget	N/A
Capital Budget	N/A
Assets	N/A
<b>Special / Physical Requirements</b>	
Location:	Lucas Heights Working in different areas of designated site/campus as needed
Travel:	May be required travel to ANSTO sites from time to time Frequent travel to ANSTO sites within Australia Frequent travel both internationally and nationally
Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer)  Standing for long periods doing laboratory work  Public speaking  Wearing personal protective equipment for the handling of hazardous and/or radioactive materials
Radiation areas:	May be required to work in radiation areas under tightly regulated conditions
Hours:	Willingness to work extended and varied hours based on operational requirements
Clearance requirements:	Satisfy ANSTO Security and Medical clearance requirements Obtain and maintain appropriate federal government clearance
<b>Workplace Health &amp; Safety</b>	
Specific role/s as specified in <u>AP- 2362</u> of the ANSTO WHS Management System	All Workers Other specialised roles identified within the guideline a position holder may be allocated to in the course of their duties

## ORGANISATIONAL CHART

Refer to published Organisational Chart.

## KNOWLEDGE, SKILLS AND EXPERIENCE

1. PhD in Medicinal Chemistry, Analytical Chemistry or other related discipline.
2. Hands-on experience developing GC and LC methods, and in analysing mass spectrometry datasets.
3. Extensive experience in applications related to mass spectrometry, gas chromatography and liquid chromatography.
4. Experience in chemical or biochemical synthesis to produce and purify molecules.
5. Extensive experience in techniques for molecular characterisation of organic molecules e.g. IR, NMR, GC-MS, HPLC, LC-MS.
6. Working knowledge of biochemistry.
7. Experience or willingness to learn techniques in the production of deuterated molecules.
8. Highly developed interpersonal and networking skills.
9. Ability to effectively adapt to organisational change and contribute towards general laboratory research goals.
10. Proven experience in managing research projects and lab instruments effectively, within scope, within budget and on time and publishing research results in refereed journals.
11. Demonstrated research leadership and publication track record.
12. Demonstrated strong customer focus and meticulous approach to execution of research in the laboratory.
13. Demonstrated experience in managing effective relationships with key stakeholders and ability and willingness to work in a team environment.

## VERIFICATION

This section verifies that the line manager and appropriate senior manager/executive confirm that this is a true and accurate reflection of the position.

Line Manager		Delegated Authority	
Name:	Tamim Darwish	Name:	Miles Apperley
Title:	Leader, NDF	Title:	Head of Research Infrastructure
Signature:		Signature:	
Date:		Date:	

## Appendix 1

<b>ANSTO Job Families</b>
Accounting & Finance
Administration
Communications & Marketing
Compliance & Regulation
Engineering and Technical
Human Resources
ICT & Digital Solutions
Information & Knowledge Management
Legal
Manufacturing
Monitoring & Audit
Operations
Organisational Leadership
Project & Program
Research
Science
Security & Intelligence
Senior Executive
Service Delivery
Strategic Policy
Trades & Labour