Australian Government

ANSTO
Science. Ingenuity. Sustainability.

POSITION DESCRIPTION

Position Title:	Structural Materials Engineer
Cluster / Business Unit / Division	Nuclear Science and Technology
Section or Unit:	Nuclear Fuel Cycle
Classification:	Band 5
Job Family:	Engineering and Technical
Position Description Number:	PD-2376
Work Contract Type:	Professional
STEMM/NON-STEMM:	STEMM
STEMM CATEGORY:	Engineering

POSITION PURPOSE

The Structural Materials Engineer plays a substantial role in ANSTO's core research projects, concentrating on the areas of nuclear materials, numerical modelling, and finite element analysis of nuclear engineering structures and components. Aligned with broader initiatives, this role includes supporting the systematic development of the future nuclear workforce in Australia, a critical aspect of key Government strategy. As such, the role holder will actively contribute to fostering the country's next generation of nuclear experts.

This multifaceted role requires meticulous attention to laboratory-based experimental tasks. These tasks include material testing and characterisation, and they are further enhanced by a methodical approach to numerical modelling. The responsibilities extend to driving research at ANSTO that provides insights into the behaviour of nuclear materials and supports advancements in the field through both numerical simulations and experimental work.

The outcome of these studies will be documented in scientific reports and publications of high quality, contributing positively to ANSTO's ongoing and future projects. The role-holder must be prepared to undertake a comprehensive and systematic approach to research, aligning with ANSTO's commitment to inclusion and technical excellence in the field of nuclear science and engineering.

ORGANISATIONAL ENVIRONMENT

ANSTO leverages great science to deliver significant 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.

Nuclear Science and Technology (NST) incorporate 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 benefit of Australia.

NST's Research Portfolio undertakes world-class applied and translational research utilising nuclear techniques to foster innovation in research and development programs, enhancing ANSTO's contribution to supporting a sustainable and healthier future for our planet and people everywhere. The Research Portfolio consists of research themes that define the broad subject areas of research, with underlying research programs that are focused activity groupings contributing to the overall objectives of the research theme and also conducting research sub-programs within platforms. The Research Themes are Environment, Human Health, and Nuclear Fuel Cycle.

The Nuclear Fuel Cycle research theme undertakes research in the safe, secure, and efficient use of nuclear fuel commodities utilising our expertise and capabilities. Research is conducted into industrial processes encompassing all parts of the nuclear fuel cycle.

ACCOUNTABILITIES & RESPONSIBILITIES

Key Accountabilities

- Participate in ongoing research projects to support Nuclear Fuel Cycle outcomes, focusing on the study of nuclear engineering materials, components, and structures.
- Support the development of Australia's future nuclear workforce by fostering a comprehensive understanding of nuclear material behaviour under extreme operating conditions in current and prospective nuclear reactor systems.
- Perform computational modelling using a variety of numerical techniques to examine the behaviour of nuclear materials as well as engineering components and structures.
- Complement computational modelling by conducting mechanical material tests and material characterisation, utilising ANSTO's cutting-edge facilities.
- Develop innovative numerical models to augment the evaluation of materials and engineering structures in the extreme operating conditions of reactor systems.
- Apply material modelling and finite element analysis expertise to undertake fitness-for-service analyses of engineering components.
- Examine components through engineering drawings and design information, utilise mathematical models for simulations, and identify alterations in structural and material properties to guide remaining life assessment decisions, adhering to both Australian and International standards.
- Share research findings within ANSTO and the broader scientific community via technical reports and peer-reviewed publications.
- Undertake additional duties as required and during a period of leave of other staff.

Decision Making

- The ANSTO values, organisational corporate plan, business plan, operational excellence program, the NST Research strategy and Nuclear Fuel Cycle objectives provide the context for the position.
- The position works within a framework of legislation, policies, professional standards and resource parameters. Within this framework, the position has limited independence in determining how to achieve the objectives of the unit.
- 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.
- Determine own work priorities in consultation with senior researchers and line managers.
- Apply methods and approaches within the context of agreed work plans and will consult with the line manager on issues that have an impact on the project or research theme.
- 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 skills and knowledge in material testing, material modelling, and finite element analysis of novel materials relevant to the nuclear industry and materials under extreme conditions.

- Contributing to the research theme and research project objectives, and project completion whilst managing conflicting priorities and deadlines.
- Understanding the conditions of working in a tightly regulated environment.
- Willingness to challenge established ways of working in favour of more productive approaches.

KEY RELATIONSHIPS

Who	Purpose
Internal	
Manager/Executive	• Receive guidance and direction • Provide expert, authoritative and evidence-based advice
Work area team members	• Contribute to advancing the knowledge of the behaviour of nuclear materials through combined material testing and materials modelling. • Contribute to developing novel material models and conducting finite element analysis of nuclear engineering components and structures. • Collaborate and share accountability
Direct Reports	• N/A
Other departments (name)	• N/A
External	
Industry	• Provide expert, authoritative and evidence-based advice • Report on work outcomes, outputs and results and project contribution and status.

POSITION DIMENSIONS

Staff Data	
Reporting Line	Reports to the Research Program Manager (Reactor Systems)
Direct Reports	Nil
Indirect Reports	Nil

Financial Data (2023/2024)	
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:	May be required to travel to ANSTO sites from time to time Some travel to workshops and conferences internationally and nationally

Physical:	Office based physical requirements (sitting, standing, minimal manual handling, movement around office and site, extended hours working at computer) 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 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-2362 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 the published Organisational Chart.

KNOWLEDGE, SKILLS AND EXPERIENCE

1. Honours degree in Mechanical Engineering or equivalent with a good understanding of maths, physics, and programming.
2. Proven ability to excel independently and as part of a research project team, actively sharing knowledge and expertise with colleagues.
3. Good knowledge of materials, numerical modelling, and finite element methodology for engineering applications.
4. Hands-on experience with programming languages such as C, Python, or Matlab.
5. Demonstrated ability to conduct mechanical material testing and material characterisation and skilled in analysing experimental data.
6. Exhibits strong scientific written and verbal communication skills.
7. Demonstrates excellent interpersonal skills, fostering positive and productive interactions with team members and collaborators.

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:	Ondrej Muransky	Name:	Mihail Ionescu
Title:	Research Program Manager (Reactor Systems)	Title:	Research Leader, Nuclear Fuel Cycle
Signature:		Signature:	
Date:		Date:	

Appendix 1

ANSTO Job Families
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