



POSITION DESCRIPTION

School of Chemistry
Faculty of Science

Postdoctoral Research Fellow (ANSTO)

POSITION NO	0045412
CLASSIFICATION	Research Fellow Level A*
SALARY	\$87,415 - \$93,830 p.a. (*PhD entry level A.6)
SUPERANNUATION	Employer contribution of 9.5%
WORKING HOURS	Full time
BASIS OF EMPLOYMENT	Fixed-term position available for 24 months
OTHER BENEFITS	http://about.unimelb.edu.au/careers/working/benefits
HOW TO APPLY	Online applications are preferred. Go to http://about.unimelb.edu.au/careers , select the relevant option ('Current Staff' or 'Prospective Staff'), then find the position by title or number.
CONTACT FOR ENQUIRIES ONLY	Dr Alessandro Soncini Tel +61 3 8344 6484 Email asoncini@unimelb.edu.au <i>Please do not send your application to this contact</i>

For information about working for the University of Melbourne, visit our website:
about.unimelb.edu.au/careers

Position Summary

The School of Chemistry is seeking a Postdoctoral Research Fellow, jointly supported by two organisations: The University of Melbourne and The Australian Nuclear Science and Technology Organisation (ANSTO) in Sydney, to undertake research with Dr Alessandro Soncini (University of Melbourne), and Dr Richard Mole (ANSTO).

The Postdoctoral Research Fellow will conduct original research involving the development and application of new ab initio-parameterised computational models to simulate novel Inelastic Neutron Scattering (INS) experiments, aimed to probe the crystal field energy levels and the spin dynamics in crystals of lanthanide-based single molecule magnets. The development and application of the theoretical models will occur under the supervision of Dr Soncini at the University of Melbourne, and will be primarily based on the ab initio quantum chemistry code CERES developed in Dr Soncini's research group. The INS experiments will be carried out by the incumbent under the supervision of Dr Mole at ANSTO.

The main objective of the research is to explore in a quantitative way the dynamical properties of lanthanide-based molecular nanomagnets, in order to identify key structural design strategies to enhance their slow magnetic relaxation properties, but also to validate existing or newly developed theoretical and computational models elucidating their electronic structure and magnetic properties.

Salary is to be provided via funding from a Discovery Project Grant from the Australian Research Council, and from ANSTO. The successful candidate will work both independently and in a team setting led by Dr Alessandro Soncini and Dr Richard Mole to contribute to the objectives of the project. In addition, the appointee will report results in written reports, refereed publications, and in oral presentations. The appointee will also be involved in collaborative interactions with other research groups.

1. Key Responsibilities

1.1 RESEARCH AND RESEARCH TRAINING

- ▶ Undertake high quality research under limited supervision in the area of Theoretical and Computational Chemistry applied to Lanthanide-based Molecular Magnetism.
- ▶ Use, develop and maintain software within the group and assist staff and students undertaking research.
- ▶ Develop reports and papers based on research findings for presentation at conferences and seminars, as well as for publications.
- ▶ Demonstrate initiative and conduct independent research, including comprehensive literature review of the research and patent literature.
- ▶ Provide guidance for undergraduate or postgraduate research projects within the area of research expertise.
- ▶ Contribute to the preparation of research proposal submissions to external funding bodies, or where appropriate prepare them individually.
- ▶ Able to attend the ANSTO Lucas Heights campus for neutron scattering experiments and subsequent data analysis.
- ▶ Undertake administrative functions and obligations primarily connected with the area of research

1.2 LEADERSHIP AND SERVICE

- ▶ Keep abreast of developments, activities and protocols in area of expertise through liaison with staff and peers, reading relevant literature and attendance at meetings and seminars.
- ▶ Attend meetings associated with research or the work of the organisational unit to which the research is connected and/or at School of Chemistry and/or Faculty meetings.

1.3 OTHER DUTIES

- ▶ Perform other tasks as requested by the supervisor or the Head of Department.
- ▶ Actively participate in the University Professional Development Framework
- ▶ Follow and help manage Occupational Health and Safety (OH&S) and Environmental Health and Safety (EH&S) responsibilities as outlined in section 4.

2. Selection Criteria

2.1 ESSENTIAL

- ▶ A PhD in Theoretical Chemistry or related area.
- ▶ Demonstrated experience with the implementation and application of computational methods in the area of ab initio electronic structure theory and molecular quantum mechanics.
- ▶ Demonstrated experience with the electronic structure theory of lanthanide-based single molecule magnets.
- ▶ Experience with one or more of the following programming languages: Fortran90, C, C++, Python.
- ▶ Experience with multiconfigurational quantum chemistry software (preferred codes: Molcas and Orca).
- ▶ A track record in research, as evidenced by high quality publications.
- ▶ Demonstrated ability to work effectively independently and in a team environment.
- ▶ Excellent time management and organisational skills with the ability to prioritise tasks, and balance a wide range of competing demands with a high level of accuracy and attention to detail.
- ▶ Excellent interpersonal, oral and written communication skills.
- ▶ Demonstrated analytical and problem solving skills.

2.2 DESIRABLE

- ▶ Experience in the development of ab initio methods for lanthanide-based single molecule magnets.
- ▶ Experience in neutron scattering methods for lanthanide-based single molecule magnets.
- ▶ Ability to co-supervise junior team members, including students.

3. Equal Opportunity, Diversity and Inclusion

The University is an equal opportunity employer and is committed to providing a workplace free from all forms of unlawful discrimination, harassment, bullying, vilification and victimisation. The University makes decisions on employment, promotion and reward on the basis of merit.

The University is committed to all aspects of equal opportunity, diversity and inclusion in the workplace and to providing all staff, students, contractors, honorary appointees, volunteers and visitors with a safe, respectful and rewarding environment free from all forms of unlawful discrimination, harassment, vilification and victimisation. This commitment is set out in the University's People Strategy 2015-2020 and policies that address diversity and inclusion, equal employment opportunity, discrimination, sexual harassment, bullying and appropriate workplace behaviour. All staff are required to comply with all University policies.

The University values diversity because we recognise that the differences in our people's age, race, ethnicity, culture, gender, nationality, sexual orientation, physical ability and background bring richness to our work environment. Consequently, the People Strategy sets out the strategic aim to drive diversity and inclusion across the University to create an environment where the compounding benefits of a diverse workforce are recognised as vital in our continuous desire to strive for excellence and reach the targets of Growing Esteem.

4. Occupational Health and Safety (OHS)

All staff are required to take reasonable care for their own health and safety and that of other personnel who may be affected by their conduct.

OHS responsibilities applicable to positions are published at:

<http://safety.unimelb.edu.au/topics/responsibilities/>

These include general staff responsibilities and those additional responsibilities that apply for Managers and Supervisors and other Personnel.

5. Other Information

5.1 SCHOOL OF CHEMISTRY

<http://www.chemistry.unimelb.edu.au>

The School of Chemistry at The University of Melbourne is one of the largest and oldest in Australia with a distinguished history in teaching and research. The first lectures in chemistry in The University of Melbourne were given in 1856, only three years after the University was founded. Since then the School has grown and developed and there are presently over 2500 undergraduates enrolled in Chemistry subjects, with more than 100 BSc (Hons), PhD and MSc research students. Teaching and undertaking research in the School are 24 continuing research and teaching staff, and over 30 research only staff, supported by a similar number of technical and administrative personnel.

The School has an excellent international reputation in research and an outstanding record of achievement in attracting external research funding. There is an ongoing program to keep its research facilities at world standard and to focus our research efforts. This has involved progressive upgrading of the School's laboratories, the purchase of state-of-the-art instrumentation and recruitment of academics with a strong research profile. In addition, we are building stronger links with other disciplines within the University and with other research institutions locally and internationally.

The School of Chemistry is a key participant in the Bio21 Institute, a major world-class biotechnology initiative in Victoria. New purpose-built research laboratories for a number of research groups in the School are housed in the \$100 million Bio21 Institute of Molecular Science and Biotechnology building that opened in 2005. This exciting development provides state-of-the-art facilities for researchers in a dynamic interdisciplinary environment.

5.2 FACULTY OF SCIENCE

<http://www.science.unimelb.edu.au>

Science at the University of Melbourne is the most highly ranked Faculty of Science in Australia.* Science is defined by its research excellence in the physical and life sciences and is at the forefront of research addressing major societal issues from climate change to disease. Our discoveries help build an understanding of the world around us.

We have over 150 years of experience in pioneering scientific thinking and analysis, leading to outstanding teaching and learning and offer a curriculum based on highly relevant research, which empowers our STEM students and graduates to understand and address complexities that impact real world issues and the challenges of tomorrow.

We aspire to engage the broader community with the impact that Science has on our everyday lives. Through the strength of our internships and research project offerings, our students are provided opportunities to engage with industry partners to solve real-world issues.

The Faculty of Science has over 55,000 alumni and is one of the largest faculties in the University comprising seven schools: BioSciences, Chemistry, Earth Sciences, Ecosystem and Forest Sciences, Geography, Mathematics and Statistics, and Physics.

The Faculty is custodian of the Bio21 Molecular Science and Biotechnology Institute, Office for Environmental Programs and home to numerous Centres.

Science manages more than \$315 million of income per annum, with a staff base in the order of 270 professional staff, and more than 580 academic staff.

We offer a range of undergraduate, honours, graduate and research degrees; enrolling over 9,400 undergraduate and 2,000 graduate students. The Faculty of Science is the custodial Faculty for the BSc (Bachelor of Science). The Faculty of Science is a leader in research, contributing approximately \$80 million in HERDC income per annum. The Faculty of Science is highly research focused, performing strongly in the ARC competitive grants schemes, often out-performing the national average. The Faculty of Science is currently growing its competitiveness and standing in the NHMRC space.

The Faculty of Science provides community services and industry partnerships based on a solid foundation of research in the pure and applied sciences. The Faculty has an endowment of approximately \$78 million. The annual income from the endowment supports more than 250 prizes, scholarships and research awards.

*Figures from the latest available data for 2015, including published international rankings data.

5.3 THE UNIVERSITY OF MELBOURNE

Established in 1853, the University of Melbourne is a leading international university with a tradition of excellence in teaching and research. The main campus in Parkville is recognised as the hub of Australia's premier knowledge precinct comprising eight hospitals, many leading research institutes and a wide-range of knowledge-based industries. With outstanding performance in international rankings, the University is at the forefront of higher education in the Asia-Pacific region and the world.

The University employs people of outstanding calibre and offers a unique environment where staff are valued and rewarded.

Further information about working at The University of Melbourne is available at <http://about.unimelb.edu.au/careers>.

5.4 GROWING ESTEEM, THE MELBOURNE CURRICULUM AND RESEARCH AT MELBOURNE: ENSURING EXCELLENCE AND IMPACT TO 2025

Growing Esteem describes Melbourne's strategy to achieve its aspiration to be a public-spirited and internationally-engaged institution, highly regarded for making distinctive contributions to society in research and research training, learning and teaching, and engagement. <http://about.unimelb.edu.au/strategy-and-leadership>

The University is at the forefront of Australia's changing higher education system and offers a distinctive model of education known collectively as the Melbourne Curriculum. The new educational model, designed for an outstanding experience for all students, is based on six broad undergraduate programs followed by a graduate professional degree, research higher degree or entry directly into employment. The emphasis on academic breadth as well as disciplinary depth in the new degrees ensures that graduates will have the capacity to succeed in a world where knowledge boundaries are shifting and reforming to create new frontiers and challenges. In moving to the new model, the University is also aligning itself with the best of emerging European and Asian practice and well-established North American traditions.

The University's global aspirations seek to make significant contributions to major social, economic and environmental challenges. Accordingly, the University's research strategy *Research at Melbourne: Ensuring Excellence and Impact to 2025* aspires to a significant advancement in the excellence and impact of its research outputs.

<http://research.unimelb.edu.au/our-research/research-at-melbourne>

The strategy recognises that as a public-spirited, research-intensive institution of the future, the University must strive to make a tangible impact in Australia and the world, working across disciplinary and sectoral boundaries and building deeper and more substantive engagement with industry, collaborators and partners. While cultivating the fundamental enabling disciplines through investigator-driven research, the University has adopted three grand challenges aspiring to solve some of the most difficult problems facing our world in the next century. These Grand Challenges include:

- ▶ Understanding our place and purpose – The place and purpose grand challenge centres on understanding all aspects of our national identity, with a focus on Australia's 'place' in the Asia-Pacific region and the world, and on our 'purpose' or mission to improve all dimensions of the human condition through our research.
- ▶ Fostering health and wellbeing – The health and wellbeing grand challenge focuses on building the scale and breadth of our capabilities in population and global health; on harnessing our contribution to the 'convergence revolution' of biomedical and health research, bringing together the life sciences, engineering and the physical sciences; and on addressing the physical, mental and social aspects of wellbeing by looking beyond the traditional boundaries of biomedicine.
- ▶ Supporting sustainability and resilience – The sustainability and resilience grand challenge addresses the critical issues of climate change, water and food security, sustainable energy and designing resilient cities and regions. In addition to the technical aspects, this grand challenge considers the physical and social functioning of cities, connecting physical phenomena with lessons from our past, and the implications of the technical solutions for economies, living patterns and behaviours.

Essential to tackling these challenges, an outstanding faculty, high performing students, wide collaboration including internationally and deep partnerships with external parties form central components of Research at Melbourne: Ensuring Excellence and Impact to 2025.

5.5 GOVERNANCE

The Vice Chancellor is the Chief Executive Officer of the University and responsible to Council for the good management of the University.

Comprehensive information about the University of Melbourne and its governance structure is available at <http://www.unimelb.edu.au/governance>