

Melbourne-Bayreuth IRTG Joint PhD Program

PhD Scholarship to Study Light Pulse Control of Excitons

Position Summary

The Universities of Melbourne and Bayreuth have created a new, joint PhD program. Students from each University spend a minimum of 12 months at the partner University and submit a PhD thesis at each location. Students need to be Australian residents and have an undergraduate mark equivalent to those required for an APA. The project listed below is supported through the ARC Centre of Excellence in Exciton Science (ACEx).

ACEx: The overall mission of ACEx is to examine and manipulate the way light energy is absorbed, transported and transformed in advanced molecular materials. This project is a collaboration between the School of Chemistry and the Department of Physics at Universität Bayreuth. ACEx values equity and diversity and promotes an inclusive workplace culture for staff irrespective of their gender identity, ethnicity, or cultural background. We recognise that diversity drives excellence and innovation in research and teaching and a key objective is to lift the proportion of women in our workplace.

Project Outline: Using timed sequences of ultrashort laser pulses, it should be possible to control the fate of an exciton. We aim to investigate multichromophoric molecules that comprise groups that absorb (and perhaps emit) in specific regions of the spectrum, that we can modulate with timed pulses of different wavelengths. Bespoke multichromophoric molecules are to be synthesised in Melbourne and ultrafast laser experiments will be conducted in both Melbourne and Bayreuth. We are seeking an Australian student to work on this project as part of a joint PhD with the University of Bayreuth. The successful student will spend a minimum of 12 months at Bayreuth, Institute of Physics along with Prof. Markus Lippitz and/or Prof. Georg Herink. Knowledge of German is not essential but useful. Students with an interest in laser spectroscopy and/or excitonic materials are sought.

Location: The Microspectroscopy Laboratory is located in the School of Chemistry, University of Melbourne.

Selection Criteria

ESSENTIAL:

- MSc or equivalent in fast spectroscopy, laser optics and polymer synthesis;
- Excellent written and oral communication skills;
- Demonstrated organisational skills, time management and ability to work to priorities;
- Demonstrated problem-solving abilities;
- The ability to work independently and as a member of a team.

DESIRABLE:

- Experience in optical instrumentation, high resolution spectroscopy, chemical synthesis and purification.

SALARY LEVEL: A\$31,200 pa. stipend (tax-free). Further information on benefits is available here <https://scholarships.unimelb.edu.au/awards/graduate-research-scholarships>

EMPLOYMENT TYPE: Stipends are available for minimum 3 years, subject to satisfactory progress.

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