



University of  
South Australia



Barbara Hardy  
Institute

Tom Raimondo

## Research Profile

### Research Area Specialisation

Tom's area of research focuses on understanding why mountain ranges form in the interiors of continents. The causes of mountain building in these settings are enigmatic and controversial as plate tectonics theory states that they should be confined to plate boundaries alone.

Tom is particularly interested in the role that thermal processes and fluid-rock interaction play in weakening the Earth's crust, making it susceptible to this unusual kind of deformation. This is important to our understanding of the causes and controls on both ore mineralisation and seismic activity. Central Australia contains some remarkable intraplate mountain ranges, arguably the best ancient examples in the world. In his research, field work combined with cutting-edge geochemical and metamorphic analysis combines to better understand geological evolution.

### Contributing to a better and sustainable environment

Investigating the controls on mountain building in central Australia contributes to the understanding of both ore mineralisation and seismicity. Despite its relative geological stability, the Australian continent is still subject to the same kind of processes that built the ancient mountains of central Australia. A side effect of this is the seismic activity that we occasionally experience in the Adelaide region and elsewhere.

Fluids are also an important part in Tom's research as they are the driving force for much of the mineralisation and alteration in significant deposits such as exists at Olympic Dam. Recognising how such deposits occur and how they can be better detected and analysed is vital to maintain Australia's mineral wealth.



University of  
South Australia

Barbara Hardy  
Institute

*Great Research  
into Sustainability*

w: [unisa.edu.au/barbarahardy](http://unisa.edu.au/barbarahardy)  
p: +61 8 8302 5347  
e: [barbarahardyinstitute@unisa.edu.au](mailto:barbarahardyinstitute@unisa.edu.au)

CRICOS provider number 00121B

## People

- Our researchers are scientists, engineers and social scientists
- We work collaboratively on real-world issues
- Over 100 researchers and 130 research students

## Projects

- Multidisciplinary projects focused on sustainability
- We work in partnership with government, industry and academia
- Extensive testing and evaluation services and consultancy expertise
- Our work is underpinned by community participation and education

In the future, Tom will be involved in projects to investigate the large scale tectonics of the Australian plate and the minute chemical interactions that accompany fluid-rock interaction processes. Through the use of cutting-edge technologies, he expects to gain new and innovative insights into these issues.

## Research Abstract

Currently, Tom is undertaking a new project that will contribute to better understanding the geological evolution of the Strangways Metamorphic Complex in central Australia. The region contains some of the most spectacular geology in the country, largely as a result of fluid-rock interaction processes. However, this aspect has not received any detailed research to date.

Tom hopes to link the fluid flow processes affecting the Strangways with better-studied regions to the east and west to develop an integrated model that explains the precise contribution of fluid flow in the development of intracontinental orogenesis in this area.

## Research areas of interest

- Intracontinental mountain building in central Australia
- Fluid-rock interaction in shear zones
- Isotope and elemental geochemistry of fluid flow and its links to tectonic processes

## Barbara Hardy Institute

The Barbara Hardy Institute is part of a growing research culture at the University of South Australia with its increasing recognition as a premier research organisation on the national and international stage. This gives its members national and worldwide recognition and support.

## Keywords to describe Tom's research

- Fluid-rock interaction
- Tectonics
- Geochemistry
- Central Australia



This flyer has been printed on envirocare 100% recycled paper.

All inks used for this publication are soy/vegetable-based inks which help to prevent air and water pollution, while providing brighter, lasting colours and contributing to the reduction of emissions from >30%VOC (Volatile Organic Compounds) to as low as 2-4% VOC's.

While every effort is made to provide full and accurate information at the time of publication, the University does not give any warranties in relation to the accuracy and completeness of the contents. The University does not accept responsibility for any loss or damage occasioned by use of the information contained in this publication. The University also reserves the right to discontinue or vary arrangements, programs, courses (units), assessment requirements and admission requirements without further notice.

CRICOS Provider Number 00121B

Printed May 2013



*"This research is important to recognise the causes of ore mineralisation and seismic activity and its understanding for future management."*