



**The MacDiarmid Institute**

*for Advanced Materials and Nanotechnology*

Post Doc position:

## **high pressure research.**

A post doc position in High Pressure Research is available for a period of two years. The position is funded by the MacDiarmid Institute for Advanced Materials and Nanotechnology and will be located at Industrial Research Ltd (IRL), a partner in the MacDiarmid Institute.

The successful Applicant will have a PhD and significant experience in high-pressure techniques and high-pressure research. The duties will be to carry out high pressure studies on HTS superconductors as detailed below; to extend the existing high pressure facilities to include a piston-cylinder apparatus for electronic transport measurements to 3.5 GPa, a diamond anvil system for use in a MacDiarmid Institute MPMS SQUID magnetometer, and a high-field high-pressure apparatus to 16+ Tesla.

Depending upon other subsequent funding the position could lead to a permanent position in a centre for research in extreme environments, focusing on a matrix of high-pressure, high-field, low-temperature and high-temperature research into electronic materials

### **High-pressure studies on high-temperature superconductors (HTS)**

A primary focus will be to develop high pressure transport measurements in HTS using a piston-cylinder apparatus that has already been purchased but not yet commissioned. A novel aspect of this will be to develop and undertake thermopower measurements at high pressure in order to determine the impact of pressure on the van Hove singularity observed in overdoped HTS. Further, studies will be carried out on conductivity fluctuations above  $T_c$  as a function of pressure in order to determine the impact of pressure on suppressing fluctuations.

Sincerely,

Jeffery Tallon.

*Dr Jeffery L. Tallon CNZM, FRSNZ, Hon FIPENZ  
MacDiarmid Institute for Advanced Materials and Nanotechnology  
Industrial Research Ltd  
P.O. Box 31310  
Lower Hutt  
NEW ZEALAND*

[J.Tallon@irl.cri.nz](mailto:J.Tallon@irl.cri.nz)