Project H2

Project Summary

The ability to place metamorphic, deformational and mineralisation events into a temporal context is central to understanding the processes by which ore bodies form. This project is designed to develop, evaluate and test new isotopic analytical techniques and protocols that may allow the absolute timing of a range of geological processes relevant to mineralising systems to be resolved.

We will focus on the development and evaluation of Pb-Pb step-leaching methods and test the suitability of these methods for dating a variety of common metamorphic minerals (e.g. garnet and staurolite) in a variety of geological settings. Fundamental to the success of this project is gaining an understanding of both structural and compositional variations within minerals, and where within each mineral phase the parent and daughter isotopes are likely to reside. Detailed SEM, electron microprobe and trace element ICPMS studies will be undertaken in conjunction with the Pb-isotope mass spectrometry to resolve these questions. The results will allow an assessment of the success of this approach, and to postulate the circumstances under which this approach might provide reliable results and to determine what parameters are deleterious to obtaining reliable data.

The preliminary development of this technique, and bench-testing against other geochronological data, will be conducted in the Broken Hill area, as high quality data already exist for this area and it is a focus of study in the terrane program of the pmd*CRC.