

## Matthew Grimshaw



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CSIRO is a government agency for scientific research in Australia and I was lucky enough to be invited to take part in a three month internship. With the support of IAG and the Mineralogical Society I travelled to the Australian Resources Research Centre in Perth.

I had contacted Dr Mark Pearce in regards to his research using the microstructure of gold to inform high grade gold deposits. The aim of the internship was to combine chemical mapping of gold and associated minerals with detailed gold crystallography to inform mineralisation. The softness of gold makes polishing extremely difficult and has meant that the internal crystal structure has rarely been considered. The expertise in polishing and microstructure at CSIRO and University of Leeds research into the chemistry of detrital gold provided an ideal opportunity to collaborate.

The project focussed on samples collected from my PhD area in the Lone Star area of the Klondike, Canada. Here the placer miners of the 1896 gold rush collected huge quantities of gold which has been shown to be very locally sourced from veins on the adjacent hillside. Whilst the general location of the mineralized veins is known, the fluids that transported and deposited gold to these sites is poorly understood and cannot be adequately explained by current deposit models.

The preliminary results have shown that in situ mineralisation is dominated by large crystals. These persist into the placer environment and provide a useful reference to track deformation processes. Understanding the modification of gold grain shape in the fluvial environment may provide useful information about the distance transported and the potential source. The outcomes of the internship will form part of my thesis and is planned to be published. Collaboration between CSIRO and University of Leeds will continue through further polishing of samples and a chance to present some of the work at a conference in New Zealand (February 2017).

An opportunity to take part in an internship during a PhD is something I would highly recommend. It provided me with a chance to study a new subject and experience a different research environment. I hope to incorporate many of the things I learnt during the last year of my PhD.