

Application Note for microsphere imaging. Mineralogy Samples

Mineralogy Imaging

What

The following images show platinum deposits (or phases) in a sample of volcanic stone. Phases such as these can occur in rocks enriched with platinum, and at larger scales can be seen with normal optical microscopy. This particular sample demonstrates small features that are difficult to observe with normal microscopy due to limitations in both resolution and contrast. The sample itself comes from a 60 million year old 'fossil' magma chamber, preserved on the Isle of Rum, NW Scotland.

Thanks to Dr Brian O'Driscoll and the University of Manchester for providing the samples. More information can be found of these samples here: [Geology Today, Vol. 30, No. 4, July–August 2014.](#)

Why

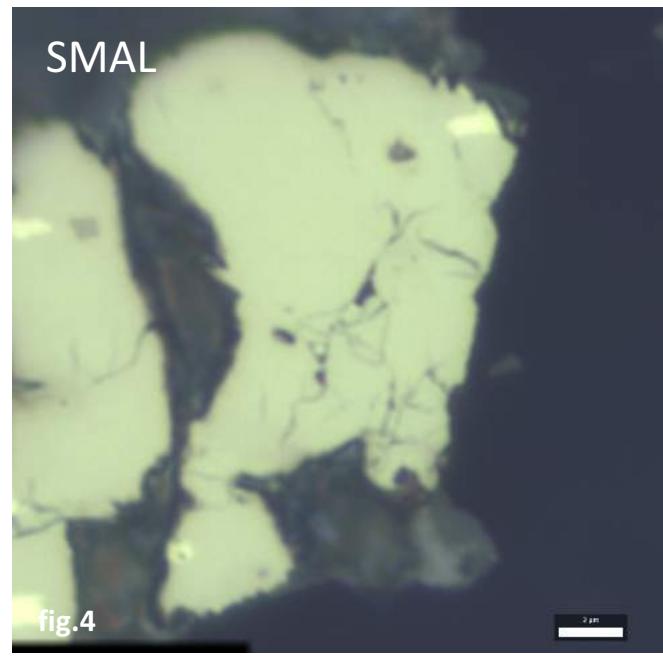
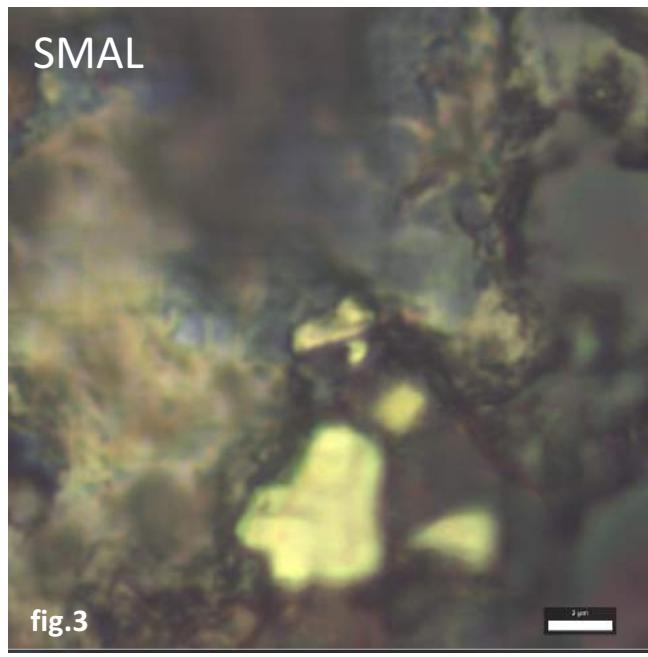
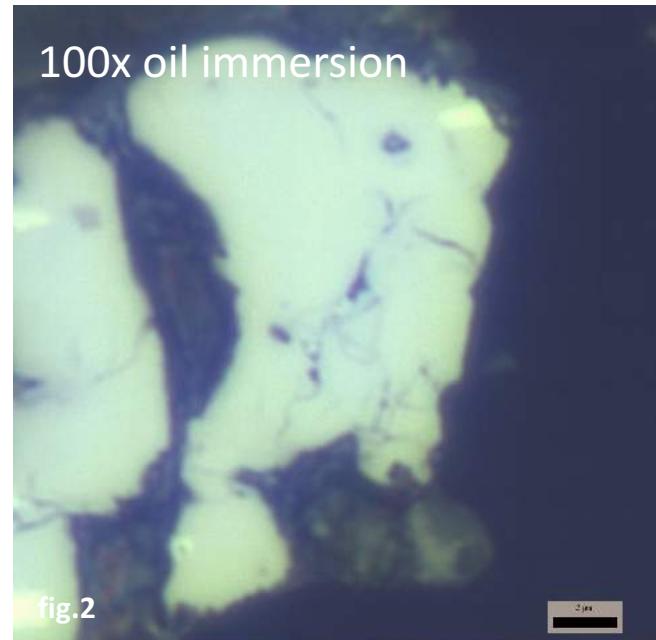
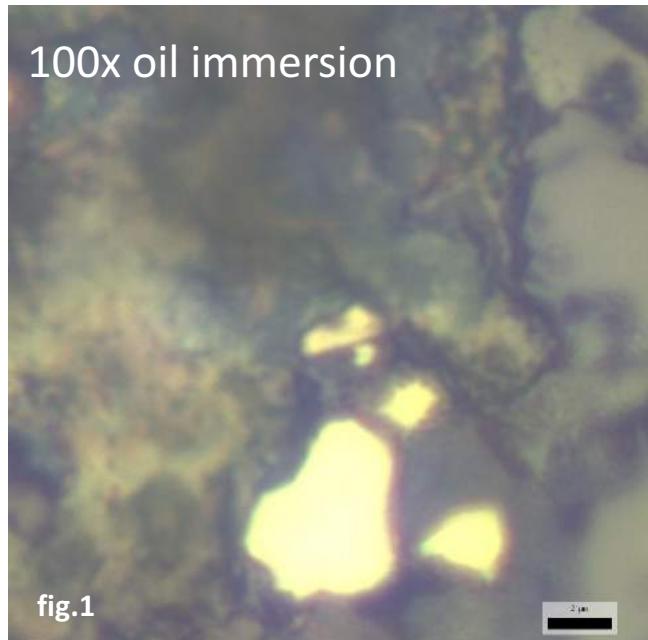
Investigating samples such as these by SMAL lens technology to provide super resolution provides many benefits. In addition to the increased resolution, the extra colour information can be quite revealing about the fine detail held at sub diffraction scales. This capability is unique to SMAL lens technology.

"The spatial resolution offered by SMAL has the potential to better reveal the characteristics of platinum-rich phases that are 10s to 100s of nm in size, which will help us to better understand how they form in high temperature sub-volcanic magmatic settings."

Dr Brian O'Driscoll
Senior Lecturer in Petrology
The University of Manchester



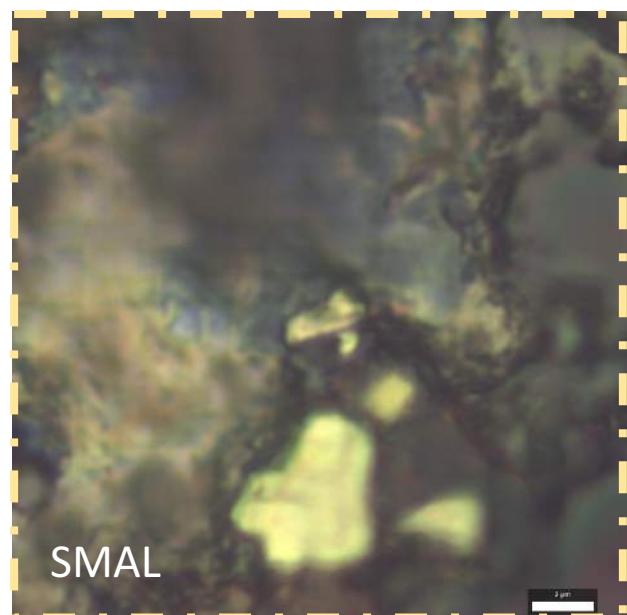
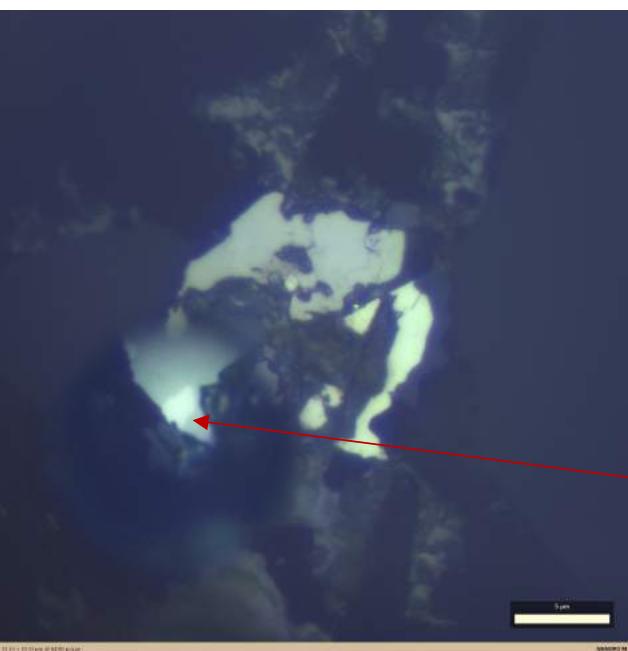
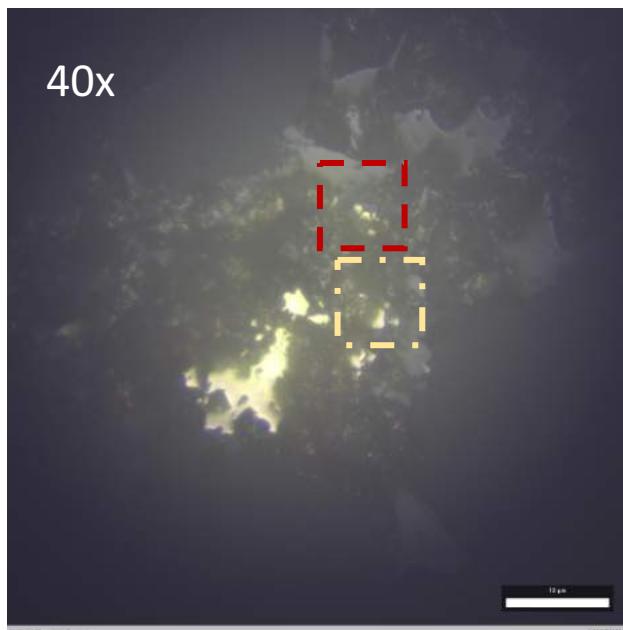
100x oil immersion vs. SMAL (platinum deposits)



Above is a comparison between 100x imaging of the sample and SMAL over different areas. Greater contrast, colour and resolution can be seen at these high magnifications.

40x oil immersion vs. SMAL (platinum deposits)

Below is a 40x image (fig.5) and three high-resolution scans using SMAL (fig.6,7,8). You can see the improved resolution and magnification of SMAL, coupled with increased contrast reveals details of the platinum deposit.



The direct observation through microsphere while exploring the sample offers the opportunity to observe and analyze interesting mineral fragments.



LIGNANOWISE

LIG NANOWISE
Unit 11 Williams House
Manchester Science Park
M15 6SE

(+44) 0161 342 0515
www.lig-nanowise.com

For more information please contact:
enquiry@lig-nanowise.com