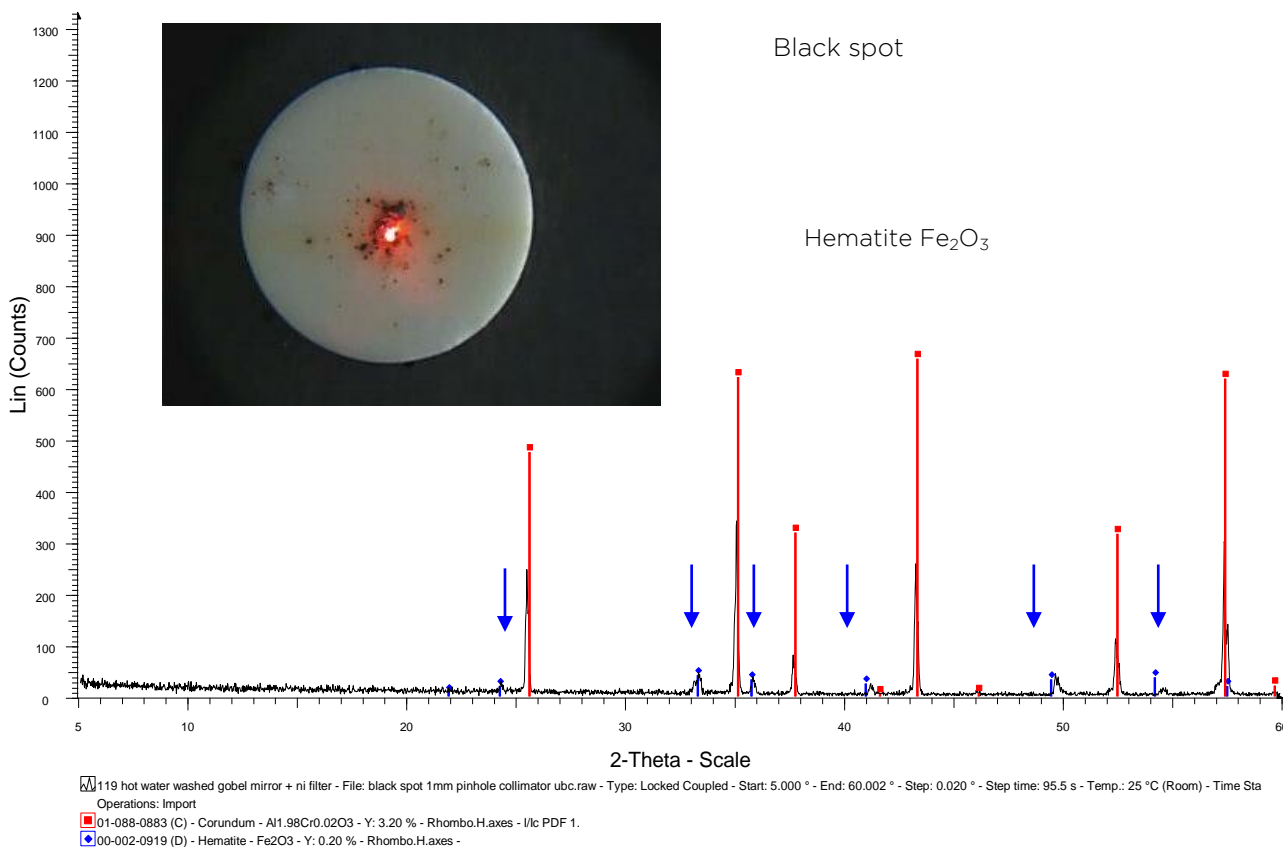


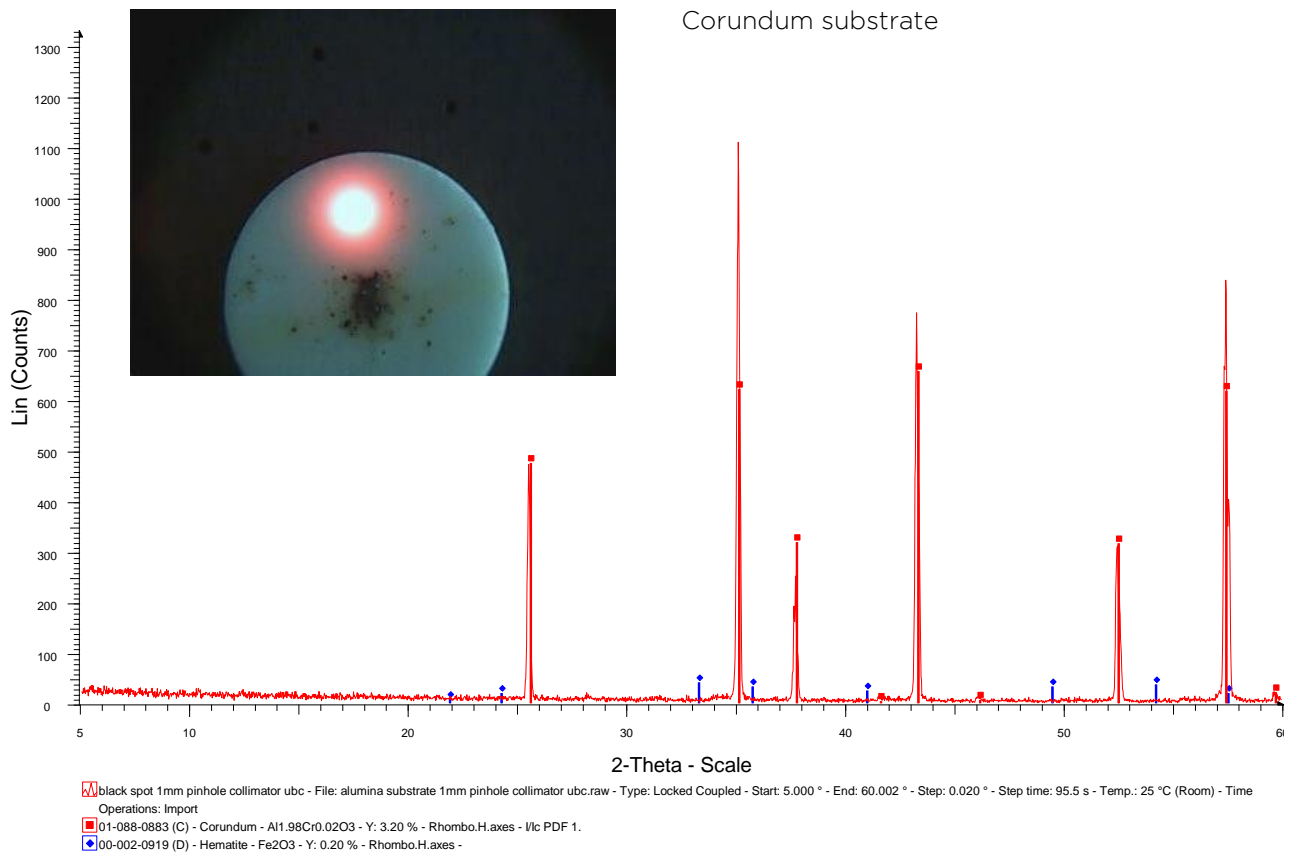
XRD APPLICATION NOTE: MICRO X-RAY DIFFRACTION (μ -XRD) OF IRON-BASED SPOT

Spatially resolved X-Ray Diffraction (XRD) can be used for a variety of applications, including: evaluation across interfaces and reaction zones, phase mapping and crystallographic examination of inclusions or defects.

EXAMPLE

To illustrate the capabilities of (Micro X-Ray Diffraction) μ -XRD and identify unknown inclusions, a sintered alumina disc was stained with magnetite (Fe_3O_4) then fired to 1,400°C for 15 minutes in air. μ -XRD of the defect area and an unaffected area was carried out using the D8 Advance Diffractometer in coupled theta-two theta mode. Areas of interest were selected using the laser alignment, enabling images of the areas of interest to be captured.





Results show the differences in diffraction pattern between the two regions and the presence of additional peaks in the black spot area. μ -XRD shows that the brown staining phase deposited on the corundum disc is haematite (Fe_2O_3) using a pinhole slit of 1mm.