



POWDER X-RAY DIFFRACTION ANALYSIS OF SUBMITTED SAMPLES

QUT Reference : XAF 5882

Your Reference: AS09049479

760106-110, 760151-155, 760919-923, 760999-1003,
761388-392

Date: 20 July 2009

INTRODUCTION

The samples were sent by Shaun Kenny of ALS Brisbane for powder x-ray diffraction analysis to determine the identity of the compounds present. The samples were received on 16 July 2009.

PROCEDURE

The samples were examined as received. Step-scanned diffraction patterns were collected using a Panalytical vertical diffractometer, copper K α radiation and the usual conditions. The powder x-ray diffraction data was analysed using Jade (V9.0, Materials Data Inc.) for phase identification and modelled with SiroQuant (V3, Sietronics Pty Ltd) for semi-quantitative analysis using a Rietveld analysis approach. The results at relative and nominal, they do not take into consideration any non-diffracting content or unidentified phases.

RESULTS

The phases identified are listed on the diffraction patterns attached.

The samples contain abundant quartz and fluoroapatite, with minor muscovite and kaolinite. Some samples have minor goethite and 760151-155 has a minor unidentified phase. Francolite is a carbonate containing apatite variant – the diffraction lines of these samples agree more closely with fluoroapatite but the phase may be some other apatite variant.

	760106-110	760151-155	760919-923	760999-1003	761388-392
quartz	44.8	27.6	48.8	41.5	18.2
fluoroapatite	43.4	64.8	41.1	48.1	73.5
muscovite	7.3	5.6	3.3	3.4	6.5
kaolinite	4.6	2.1	1.2	4.8	1.8
goethite			5.6	2.2	

Tony Raftery

Tony Raftery
Senior Technologist

XAF 5882 20 July 2009 Page 1 of 4

X-ray Analysis Facility
Faculty of Science & Technology
Queensland University of Technology
www.xaf.qut.edu.au

Powder XRD patterns





