Supporting Information for

A NOVEL APPROACH TO QUANTIFY SCALE THICKNESS AND DISTRIBUTION IN STIRRED VESSELS

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XRD phase identification

X-Ray Diffraction (XRD) analysis was performed at the diffraction laboratory at CSIRO Mineral Resources. The scale sample was ground in a mortar and pestle to break up any agglomerates and ensure homogeneity. The particles were then pressed into a flat plate using a PANalytical sample holder. During data collection, the sample was rotated at 15 RPM to improve measurement statistics. Diffraction data were collected from 5 - 140° 2θ using a PANalytical MPD instrument fitted with a cobalt long-fine-focus X-ray tube operated at 40 kV and 40 mA. The incident beam path was defined using 0.04 radian Soller slits, and a 0.5° fixed divergence slit. The diffracted beam passed through a graphite monochromator to eliminate unwanted wavelengths and a 4.6 mm anti-scatter slit. An X'Celerator detector was used in scanning line (1D) mode with an active length of 2.122° 2θ. Data were collected with a step size of 0.033° 2θ (approximately a 4 hour scan). Phase identification was performed using PANalytical Highscore Plus© software (V4.1) which interfaces with the International Centre for Diffraction Data PDF-4+ 2016 database. Quantitative phase analysis (QPA) was carried out using the Rietveld method (Hill and Howard[1], Rietveld [2]) using the software, TOPAS V5.

References

(1). Hill, R. J.; Howard, C. J., Quantitative phase analysis from neutron powder diffraction data using the Rietveld method. *J. Appl. Crystallogr.* **1987,** *20*, (6), 467-474.
(2). Rietveld, H. M., A profile refinement method for nuclear and magnetic structures. *J. Appl. Crystallogr.* **1969,** *2*, (2), 65-71.