

**SURFACE AREA DETERMINATION OF INTERSTRATIFIED
PHYLLOSILICATES IN ATHABASCA OIL SANDS FROM SYNCHROTRON X-
RAY SCATTERING DOMAIN SIZE.**

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The surface area of the individual phyllosilicates in Athabasca oil sands were determined from XRD crystallite size measurements. The primary phyllosilicates are kaolin, illite and chlorite but the large surface area is imparted by varying degrees of smectitic interstratification in the primary phyllosilicates.

The crystallite size information of each phyllosilicate was extracted from the 00 l x-ray diffraction peaks using both the Warren-Avenbach technique and Williamson-Hall plots. The surface area was then determined from the aspect ratio that had been observed for the individual phyllosilicates. The surface areas estimated by these techniques were found to be comparable to those determined by ethylene glycol monoethyl ether adsorption and transmission electron microscopy.

The ability to quantify the surface area contribution from individual phyllosilicates in the oil sands solid matrix is important for developing models to predict tailings behaviour and the release water chemistry.