BACKGROUND AND BOUNDARY CORRECTIONS IN MICRO-XRD PHASE SCANNING

Yu Wang[1], Charlie Kong[1], Qixin Liu[2]

1. MW Analytical Centre, University of New South Wales, Australia;
2. ALS Mineral, Vancouver Branch, Canada

The development of Micro X-ray diffraction in laboratory base has provided a reasonable spatial resolution to identify localised phases on sample surface. It not only has been widely used for polycrystalline phase identification, but also offers a capability to determine the phase distribution over the surface by phase scanning or mapping.

This paper is to address a few fundamentals in phase scanning technique, including background correction, boundary determination and resolution of the scanning using micro X-ray beam. A mathematic model is established to simulate the scanning process and indicates correlation among X-ray beam size, scanning step size and the dimension of the detected phase. Results show that the pattern or mapping images obtained directly from scanning may not show true location and dimension of the phase, particularly a phenomenon of intensity tailing; some corrections are necessary in order to subtract the real information on phase distribution. A few experiments, on different samples with layered structures, have been done in micro-XRD, SEM and EDS to verify the modelling. The results have very good match with the modelling predictions and indicate that a real phase distribution can be achieved after the corrections.