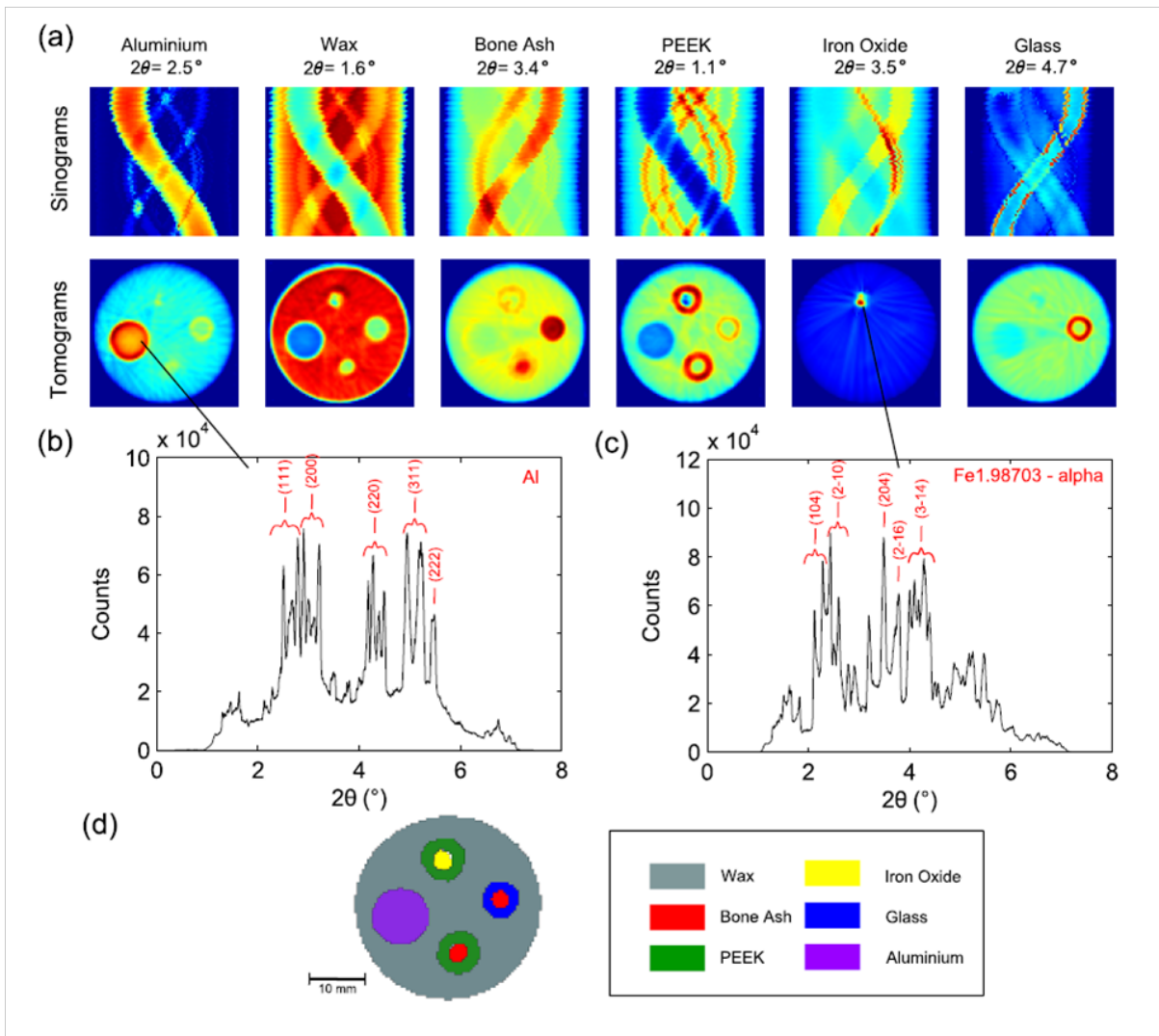


Supplementary Information



Object reconstruction for angle-dispersive diffraction data. Whilst the reconstructed phases appear accurate, phase identification was almost impossible without prior knowledge of the sample composition. For example it was not possible to conclusively say that the iron oxide phase was hematite, as was identified using EDD data. Therefore, TADDI for large objects holds no apparent advantage over say standard X-ray absorption tomography.

Data collected on beamline ID15A at ESRF using an incident monochromatic X-ray beam of energy 90 keV. Diffraction patterns were collected using a Pixium area detector using a count time of 0.5 seconds per translation and rotation step.