

Spectrum Imaging with Multivariate Statistical Analysis (MSA)

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Materials characterization through spectrum imaging, where a full spectrum is acquired at each pixel in a two-dimensional array, is becoming increasingly practical as a result of improvements in detectors and computing power. However, spectrum images are large data files, typically tens of megabytes today and potentially gigabytes in the near future. Accordingly, a number of data mining methods are being explored that aim to extract the relevant information from these large data files. Linear multivariate statistical analysis (MSA) provides a robust, objective and quantitative method for the analysis of spectrum images, and has the advantage that it is well suited for automation. This talk will outline the application of spectrum imaging with multivariate statistical analysis at Oak Ridge National Laboratory, with illustration through numerous examples.

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