

## **PUSHING THE DETECTION LIMITS OF MICRO X-RAY FLUORESCENCE**

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In this study, detection limits for a variety of elements were determined on an EDAX Eagle II MXRF system equipped with a polycapillary and a Rh X-ray source. Both mass, volume, and spot diameter detection limits were established using dried spot technology, where various volumes and/or masses of different elements were deposited on different substrates, dried, and quantitatively analyzed by MXRF. Preliminary results have shown that sub-nanogram levels of material can be detected in less than 200  $\mu\text{m}$  diameter spot sizes deposited on thin polymer films.

Specifically, detection limits were found for a given element as a function of mass deposited for a given spot volume, and volume deposited for a given mass. The effect of the presence of multiple elements in a droplet on the detection limit was also investigated. For example, the detection limit for copper was determined when it was deposited as a single Cu solution and in various multielement mixtures containing from 2 up to 10 different elements. To determine how the substrate affects the detection limit of different species, elemental dried spots were analyzed on different polymer films, including polypropylene and AP 1. Comparisons were also made to elements deposited on different spherical, resin substrates such as polystyrene beads.