

Abstract Submitted
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Monochromatic Micro-X-Ray Fluorescence to Detect Heavy Metal Particulates on Spider Webs as a Measure of Air Quality
ANELA CAMDZIC, AMANDA KENNEL, HAYLEY ADAMS, MICHAEL BORDRI, SARAH FORMICA, University of North Georgia — A monochromatic, micro-X-ray Fluorescence Spectroscopy ($M\mu$ XRF) system is used to analyze spider webs to detect metal particulates that are commonly found in polluted air and automobile exhaust. Spider webs are collected from areas of varying air quality with those from the most-polluted regions showing higher concentrations of heavy metals, which include Fe, Zn, Co, Mg, Pt, and Pb. The XRF system comprises a low-power (50 W), Rh-target sealed tube source, a Doubly-Curved Crystal (DCC) optic, and a Si-PiN diode detector. The coupling of the DCC optic with the low-power source allows for an intense, monochromatic, 200- μ m-diameter focal spot without the need for water-cooling or a rotating anode source.

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