

Abstract Submitted
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Particle-Induced X-Ray Emission Analysis of Atmospheric Aerosols COLIN GLEASON, Union College, CHARLES HARRINGTON, KATIE SCHUFF, MARIA BATTAGLIA, ROBERT MOORE, COLIN TURLEY, MICHAEL VINEYARD, SCOTT LABRAKE — We are developing a research program in ion-beam analysis (IBA) of atmospheric aerosols at the Union College Ion-Beam Analysis Laboratory to study the transport, transformation, and effects of airborne pollution in Upstate New York. The simultaneous applications of the IBA techniques of particle-induced X-ray emission (PIXE), Rutherford back-scattering spectrometry (RBS), particle-induced gamma-ray emission (PIGE), and proton elastic scattering analysis (PESA) is a powerful tool for the study of airborne pollution because they are non-destructive and provide quantitative information on nearly all elements of the periodic table. PIXE is the main IBA technique because it is able to detect nearly all elements from Na to U with high sensitivities and low detection limits. The aerosol samples are collected with cascade impactors that allow for the study of particulate matter as a function of particle size and the samples are analyzed using proton beams with energies around 2 MeV from the Union College 1.1-MV Pelletron Accelerator. The emitted X-rays are measured using a silicon drift detector with a resolution of 136 eV. We will describe how the aerosol samples were collected, discuss the PIXE analysis, and present preliminary results.

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