Abstract Submitted
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Development of a System to Screen for PFAS Chemicals Using PIGE at Union College[1] COLIN M. LANGTON, JACOB E. FEINSTEIN, MIA E. VILLENEUVE, SCOTT M. LABRAKE, MICHAEL F. VINEYARD, Union College — Per- and polyfluoroalkyl substances (PFAS) are man-made chemicals that have become a major environmental concern. They can be found in a broad range of products including food packaging, stain- and water-repellent fabrics, nonstick products, makeup, fire-fighting foams, and electronics. These chemicals do not break down easily in the environment, can bioaccumulate, and some can lead to adverse health effects. We are working on a system to screen for these chemicals using proton-induced gamma-ray emission (PIGE) in the Union College Ion-Beam Analysis Laboratory. Samples are bombarded in air with 1.8-MeV protons from the external beam facility on our 1.1-MV Pelletron tandem accelerator. The emitted gamma-rays are detected with a high-purity Ge detector. Currently samples are screened for the presence of PFAS chemicals within 3-5 minutes by looking for the characteristic fluorine gamma-rays at energies of 110 and 197 keV. Future work includes the development of a standards-based method to measure the concentration of fluorine in soil, water, and paper samples. We will describe our system and present preliminary results.

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