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Neutron activation analysis via nuclear decay kinetics using gamma-ray spectroscopy at SFU THOMAS DOMINGO, AARON CHESTER, KRZYSZTOF STAROSTA, JONATHAN WILLIAMS, Simon Fraser University — Gamma-ray spectroscopy is a powerful tool used in a variety of fields including nuclear and analytical chemistry, environmental science, and health risk management. At SFU, the Germanium detector for Elemental Analysis and Radiation Studies (GEARS), a low-background shielded high-purity germanium gamma-ray detector, has been used recently in all of the above fields. The current project aims to expand upon the number of applications for which GEARS can be used while enhancing its current functionality. A recent addition to the SFU Nuclear Science laboratory is the Thermo Scientific P 385 neutron generator. This device provides a nominal yield of 3×10^8 neutrons/s providing the capacity for neutron activation analysis, opening a major avenue of research at SFU which was previously unavailable. The isotopes created via neutron activation have a wide range of half-lives. To measure and study isotopes with half-lives above a second, a new analogue data acquisition system has been installed on GEARS allowing accurate measurements of decay kinetics. This new functionality enables identification and quantification of the products of neutron activation. Results from the neutron activation analysis of pure metals will be presented.

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