

Abstract Submitted  
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**A Low Cost XRF Lab For Undergraduate And High School Students**<sup>1</sup> DANIEL MARBLE, Tarleton State University — A lab on X-ray Fluorescence (XRF) in an undergraduate physics curriculum can be extremely beneficial. The lab reinforces the physics (emission of specific energy photons from a bound system) concepts from optical and gamma ray spectroscopy labs. Furthermore, the lab provides the students with an introduction to a powerful analytical technique that can non-destructively analyze samples from soils to semiconductors. XRF is usually performed using either high activity sources requiring a radiation materials license combined with an expensive x-ray detector or using a dedicated XRF system constructed using an x-ray machine. Since most smaller undergraduate institutions lack these expensive resources, XRF labs are often not performed. This talk will show how to perform an XRF lab without these expensive resources using just an exempt gamma source, a small NaI detector based counting system already available at many of these institutions and a judicious choice of unknown samples. A discussion of our use of the lab in our high school summer physics camp will also be presented.

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