

Abstract Submitted
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Construction and calibration of a low cost X-ray Fluorescence apparatus for compositional analysis of materials¹ STERLING BEESON, DAVID BIXLER, CHARLES ALLEN, TONI SAUNCY, Angelo State University Department of Physics — X-Ray Fluorescence (XRF) is a useful tool for determining elemental composition of materials. This work involves constructing a fluorescence apparatus using an Eclipse III Tube 30 keV Source with a current of 0-100 μ A and a XR-100CR X-ray detector with DP4 Preamplifier and MCA. The apparatus was constructed from independent components, interfaced for automated data acquisition, calibrated and used to examine a variety of different materials. The characteristic x-rays produced by each element in a sample allow the XRF system to determine the composition along with the percent of each element through the use of a modeling software, XRF-FP. For calibration, known samples (both pure metals and alloys) were analyzed. A sharp boundary sample was used for spot area calibration. Calibration was followed by the analysis (still ongoing) of zeolite mineral samples of unknown trace-element composition from fifteen sites in the Big Bend area.

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