

Abstract Submitted
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Thin Film Analysis Using Rutherford Backscattering Spectrometry (RBS), and Particle Induced X-Ray Emission (PIXE) JOSE PACHECO, Tarleton State University, FABIAN NAAB, University of North Texas, DANIEL MARBLE, Tarleton State University, JEROME DUGGAN, University of North Texas — The construction of a modern electronic device usually involves many deposition processes and materials. In addition to the controlling impurities and stoichiometry of the deposited film, the thickness of these films must also be carefully controlled to obtain device scaling, an essential requirement for obtaining faster, smaller, and more efficient electronic devices. We report on the suitability of RBS and PIXE to determine both film thickness and elemental composition on several materials of interest to the electronics industry. RBS and PIXE was used to determine film thickness of evaporated thin films (approx. 1000 angstroms) of Au, Cu, and Ge on silicon substrates samples as well as secondary standards of Rh, and Ge with known thicknesses. RBS was also used to analyze commercial infrared detectors of known composition sent to us by a semiconductor manufacturer. Our results show that our RBS and PIXE measurements are in close agreement for thickness and compositions of the known standards and to film thickness measurements for the deposited films obtained using a film deposition monitor.

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