

**PERFORMANCE OF A ROOM TEMPERATURE GAS PROPORTIONAL
SCINTILLATION COUNTER IN X-RAY ANALYSIS OF METALLIC ALLOYS
EXCITED WITH ALPHA PARTICLES**

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Gas Proportional Scintillation Counters are large window area, room temperature, radiation detectors that present an energy resolution about twice better than that of standard Proportional Counters i.e. about 8% for 6 keV X-rays. In spite of the continued effort carried out by our Group to replace the photomultiplier by a less bulky photosensor (photodiodes and CsI covered microstrip plates), photomultipliers still remain the photosensor of choice if the best energy resolution is required.

In the present work we describe a Gas Proportional Scintillation Counter filled with pure xenon at atmospheric pressure, with a 38 mm diameter radiation window and using the curved grid technique, instrumented with an EMI 676 QB VUV photomultiplier tube having a 2" diameter window.

Since the analysis of low Z metallic alloys with portable X-ray spectrometry units requires the use of room temperature detectors and radioactive sources as weak as possible (which means large window area detectors) we present results for the performance of the Gas Proportional Scintillation Counter referred to above, in the analysis of metallic alloys (coins and common alloys) with excitation by alpha particles (^{244}Cm of a few mCi) and its capacity for separating neighbouring Z elements lines.

The performance of such a system is discussed and compared with that of other devices based on room temperature semiconductors and standard proportional counters.