Abstract Submitted
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MUPALS – Miami University Positron Annihilation Lifetime Spectrometer MD SALAH UDDIN, HERBERT JAEGER, Miami University — A spectrometer for measuring positron lifetimes in solids is described. It consists of a pair of BaF_2 scintillators coupled to photomultiplier tubes and a fast-slow delayed coincidence system composed of standard NIM modules. The instrumental resolution curve as determined with a ^{60}Co source is well-described by a Gaussian with a full-width at half-maximum of approx. 300 ps. We used this apparatus to determine the lifetimes of positrons in commercial grade Al and PTFE (Teflon) at room temperature with a ^{22}Na positron source enclosed in Kapton® foil. Both samples show a lifetime component in the 350–450 ps range. While the PTFE sample has a long component near 2 ns, the Al sample has a short (approx. 200 ps) as well a long component (>2 ns).

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