

Abstract Submitted
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Apparatus for the analysis of surfaces in gas environments using Positron Spectroscopy¹ SUMAN SATYAL, LAWRENCE LIM, PRASAD JOGLEKAR, SUSHANT KALASKAR, KARTHIK SHASTRY, ALEXANDER WEISS — Positron spectroscopy performed with low energy beams can provide highly surface specific information due to the trapping of positrons in an image potential surface state at the time of annihilation. Here we present design details of a new positron beam system for the analysis of surfaces gas environments. The new system will employ differential pumping to transport the positrons most of the way from the source to the sample under high vacuum. The positrons will then be transported through a thin gas layer surrounding the sample. The positrons will be implanted into the sample at energies less than ~ 10 keV ensuring that a large fraction will diffuse back to the surface before annihilation. The Elemental content of the surface interacting with the gas environment will then be determined from the Doppler broadened gamma spectra.

¹Welch Y1100, NSF DMR 0907679

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