

Abstract Submitted
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Positron Doppler Broadening of Pure Elemental Metals

DESMOND FERNANDEZ¹, Southern University and A&M College, C.A. QUARLES, Texas Christian University — Positron Doppler Broadening experiments using either a Sodium 22 or a Germanium 68 source were run on a range of pure elemental metals. The results are presented as ratios of the 511 keV annihilation line spectra to selected standard metals as a function of momentum of the atomic electron. The data are compared with theoretical calculations and with previous experimental results using the Coincidence Doppler Broadening method. Additionally, systematic investigations were done to determine the best techniques for optimization of the data. The factors that have an effect on the data include counting rate, detector resolution, amplifier shaping time, source backing material, background and total number of counts in the 511 keV annihilation peak. Furthermore, we were able to extend our results using the Germanium 68 source to a quality close to that of the more expensive and complex Coincidence Doppler Broadening practice.

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