Abstract Submitted
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Study of positron annihilation with core electrons at the clean and oxygen covered Ag(001) surface[1] P. JOGLEKAR, K. SHASTRY, A. OLENGA, N.G. FAZLEEV, A.H. WEISS, Department of Physics, University of Texas at Arlington — In this paper we present measurements of the energy spectrum of electrons emitted as a result of Positron Annihilation Induce Auger Electron Emission from a clean and oxygen covered Ag (100) surface using a series of incident beam energies ranging from 20 eV down to 2 eV. A peak was observed at $\sim$ 40 eV corresponding to the N23VV Auger transition in agreement with previous PAES studies. Experimental results were investigated theoretically by calculations of positron states and annihilation probabilities of surface-trapped positrons with relevant core electrons at the clean and oxygen covered Ag(100) surface. An ab-initio investigation of stability and associated electronic properties of different adsorption phases of oxygen on Ag(100) has been performed on the basis of density functional theory and using DMOl3 code. The computed positron binding energy, positron surface state wave function, and positron annihilation probabilities of surface trapped positrons with relevant core electrons demonstrate their sensitivity to oxygen coverage, elemental content, atomic structure of the topmost layers of surfaces, and charge transfer effects. Theoretical results are compared with experimental data.

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