Abstract Submitted
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Design of an Operando Positron Annihilation Gamma Spectrometer (OPAGS)[1] SUMAN SATYAL, KARTIK SHASTRY, SUSHANT KALASKAR, LARRY LIM, VIBEK JOGLEKAR, ALEXANDER WEISS, UTA, POSITRON TEAM — Surface properties measured under UHV conditions cannot be extended to surfaces interacting with gases under realistic pressures due to surface reconstruction and other strong perturbations of the surface. Many surface probing techniques used till now have required UHV conditions to avoid data loss due to scattering of outgoing particles. Here we describe the design of an Operando Positron Annihilation Gamma Spectrometer (OPAGS) currently under construction at the University of Texas at Arlington. The new system will be capable of obtaining surface and defect specific chemical and charge state information from surfaces under realistic pressures. Differential pumping will be used to maintain the sample in a gas environment while the rest of the beam is under UHV. The Elemental content of the surface interacting with the gas environment will be determined from the Doppler broadened gamma spectra. This system will also include a time of flight (TOF) positron annihilation induced Auger spectrometer (TOF-PAES) for use in combined annihilation induced Auger and annihilation gamma measurements made under low pressure conditions.

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