Abstract Submitted
for the DAMOP09 Meeting of
The American Physical Society

**Studies of the Coster-Kronig, Shake off probabilities and Gaussian curves of L X-Ray satellites spectra** SURENDRA POONIA, Research Scientist (Atomic and X-Ray Spectroscopy) — The X-ray satellite spectra arising due to $L_2M_x$-$M_xM_{4,5}$, $L_3M_x$-$M_xM_{4,5}$and $L_3M_x$-$M_xN_{4,5}$ (x ≡ 1-5) transition array, in elements with Z = 26 to 92, have been calculated, using available Hartree-Fock-Slater (HFS) data on K-$L_3M_x$ and $L_3$-$M_xM_{4,5}$ Auger transition energies. The relative intensities of all the possible transitions have been estimated by considering cross-sections for the Auger transitions simultaneous to a hole creation and then distributing statistically the total cross sections for initial two hole states $L_3M_x$ amongst various allowed transitions from these initial states to $M_xM_{4,5}$ final states by Coster-Kronig (CK) and shake off processes. In both these processes, initial single hole creation is the prime phenomenon and electron bombardment has been the primary source of energy. Each transition has been assumed to give rise to a Gaussian line and the overall spectrum has been computed as the sum of these Gaussian curves. The calculated spectra have been compared with the measured satellite energies in $L\alpha_1$ $L\beta_1$ and $L\beta_2$ spectra. The one to one correspondence between the peaks in calculated spectra and the satellites in measured spectra has been established on the basis of the agreement between the separations in the peak energies and those in the measured satellite energies. Their intense peaks have been identified as the observed satellite lines. The peaks in the theoretical satellite spectra were identified as the experimentally reported satellites $L\alpha_3$, $L\alpha_4$, $L\alpha_5$, $L\alpha\prime$, $L\alpha^{ix}$,$L\alpha^{x}$, $L\beta_1^{I}$, $L\beta_1^{II}$, $L\beta_1^{III}$, $L\beta_1^{IV}$ $L\beta_2^{I}$, $L\beta_2^{(b)}$, $L\beta_2^{II}$ and $L\beta_2^{(c)}$ which lie on the high-energy side of the $L\alpha_1$, $L\beta_1$, $L\beta_2$ dipole line.

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Date submitted: 23 Jan 2009 Electronic form version 1.4