Abstract Submitted
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2p$^3/2$-3x$^{-1}$-3x$^{-1}$4d$^{-1}$ X-Ray Satellites spectra in the L$\beta_2$ region
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due to 2p$^3/2$,3x$^{-1}$-3x$^{-1}$4d$^{-1}$ (x ≡ s, p, d) transition array, in elements with Z = 42 to
90, have been calculated. While the energies of various transitions of the array have
been determined by using available Hartree-Fock-Slater data on 1s$^{-1}$-2p$^{-1}$3x$^{-1}$ and
2p$^{-1}$-3x$^{-1}$,3x$^{-1}$ Auger transition energies, their relative intensities have been esti-
mated by considering cross sections of singly ionized 2x$^{-1}$ (x ≡ s, p) states and then
of subsequent Coster-Kronig and shake off processes. The calculated spectra have
been compared with the measured satellite energies in L$\beta_2$ spectra. Their intense
peaks have been identified as the observed satellite lines. It has been established
that four satellites observed in the L$\beta_2$ region of the X-ray spectra of various elements
and named \(\beta_1^I, \beta_2^{(b)}, \beta_2^{II} \) and \(\beta_2^{(c)} \) in order of increasing energy are mainly emitted
by 2p$^3/2$-3d$^{-1}$-4d$^{-2}$ transitions. In the present study, we report the transition as-
signments to the satellites \(\beta_1^I, \beta_2^{(b)}, \beta_2^{II} \) and \(\beta_2^{(c)} \) reported in the spectra of elements
with Z = 42 to 52 and the satellites named \(\beta_1^I \) and \(\beta_2^{II} \) in the L - emission spectra
of the elements of 74W to 90Th. It is observed that out of these four satellites, \(\beta_2^{(b)} \)
can be assigned to superposition of \(^3\text{F}_4-^3\text{G}_5 \) and \(^3\text{F}_4-^3\text{D}_3 \) transitions and that this
must be the most intense of all these satellites in the elements Z = 42-50. In the
range of elements Z = 52 to 77, the satellite \(\beta_1^I \) is emitted by these transitions.

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