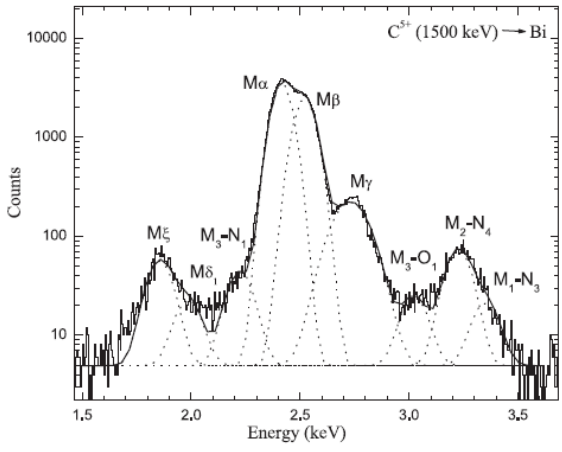
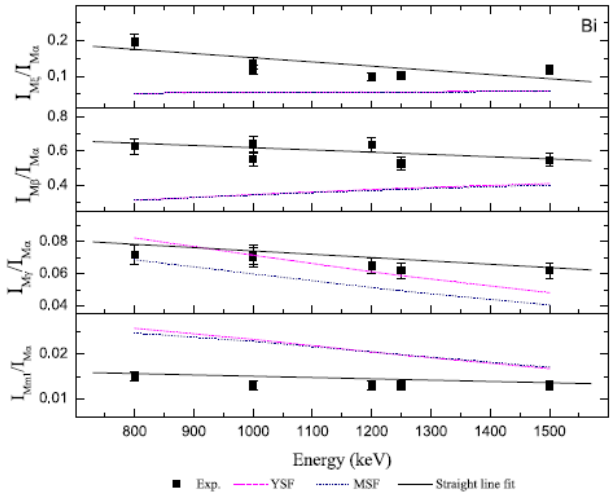
Low energy carbon ion induced M X-ray relative intensities for $_{70}$Yb, $_{82}$Pb and $_{83}$Bi

The intensity ratios, I_{Mk}/I_{Mn} (exp) (k = ξ, β, γ, m1; n = αβ, α), for $_{70}$Yb, $_{82}$Pb and $_{83}$Bi induced by the C^{q+} (q = 4, 5) ions having energies in the range 800 – 1500 keV have been measured using ECR ion source. These intensity ratios have been compared with those calculated using the ECPSSR model based carbon ion induced M_j (j = 1–5) sub-shell ionization cross sections, the X-ray emission rates based on the Dirac-Fock model, and two sets of the fluorescence and Coster-Kronig yields. Significant differences observed between the present measured and calculated ratios could be due to multiple-ionization induced in the investigated elements by the incident carbon ions.



The spectrum for $_{83}$Bi M X-rays induced by the 1500 keV C^{5+} ion beam. The vertical step connected line, bold line and the dotted lines represent the measured, fitted M_{tot} and fitted M_k (k=ξ, δ_1, (M_3-N_1), α, β, γ, Mm_1[(M_3-O_1)+(M_2-N_4)+(M_1-N_3)]) X-ray peaks, respectively.



A plot of the present measured intensity ratios $I_{MK}/I_{M\alpha}$ *(Exp)(k=ξ, β, γ,* m1) along with $I_{MK}/I_{M\alpha}$ *(YSF) and* $I_{MK}/I_{M\alpha}$ *(MSF) for* $_{83}$*Bi as a function of incident* carbon energy. The straight bold lines have been drawn across the present measured values to guide the eye.

Ref. :

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