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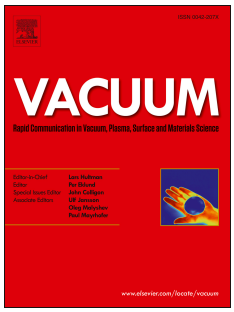

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Measurement of Coster-Kronig Vacancy Transfer Factor of some Lanthanides using monoenergetic X-ray photons

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ABSTRACT

Using monoenergetic X-ray photons from Indus-2 synchrotron Centre, the Coster-Kronig vacancy factor(κ) for L_3 subshell X-rays of some lanthanide elements such as Gd, Tb, Ho and compounds such as Pr_2O_3, $Pr_2(CO_3)_3.8H_2O$, Nd_2O_3, Sm_2O_3, $Sm_2(CO_3)_3.2.85H_2O$, $Sm_2(SO_4)_3.8H_2O$, $Gd_2(CO_3)_3$, Tb_2O_3, $Dy_2(SO_4)_3$, Ho_2O_3 and HoF_3 have been determined experimentally. By measuring L_α X-ray production cross-section, the L_3 subshell fluorescence yield and theoretical values of the L_3 subshell photoionization cross-section and level widths, the κ values have been determined. Comparison of the measured experimental κ values with theoretical values indicates that the influence of the chemical environment on κ values in the selected lanthanide targets is not noticeable.

Keywords: L shell; Coster-Kronig; Synchrotron radiation; X-rays; vacancy transfer; lanthanides