X-ray attenuation coefficients of Gd compounds in the K edge region at different energies

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The total mass attenuation coefficients for element Gd and compounds Gd\textsubscript{2}O\textsubscript{3}, Gd\textsubscript{2}(CO\textsubscript{3})\textsubscript{2}.H\textsubscript{2}O, Gd\textsubscript{2}(C\textsubscript{2}O\textsubscript{4}).H\textsubscript{2}O and Gd\textsubscript{2}(SO\textsubscript{4})\textsubscript{3} were measured at the different energies between 39.522-57.142keV range by using secondary excitation method. Sm, Eu, Gd, Tb, Dy, Ho and Er were chosen as secondary exciter. 59.54 keV gamma rays emitted from an Am-241 annular source were used to excite secondary exciter and K\(\alpha_2\), K\(\alpha_1\), K\(\beta_1\) and K\(\beta_2\) lines emitted of secondary exciter were counted by a Si(Li) detector with a resolution of 160 eV at 5.9 keV. The validity of mixture rule was discussed around the absorption edge for compounds. Obtained values were compared with theoretical values.

\textbf{Keywords:} Total mass attenuation coefficient, EDXRF, Mixture rule.