

# XAFS Study on Chlorination of $\text{Y}_2\text{O}_3$ in $\text{LiCl-KCl-ZrCl}_4$ Melt

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The chlorination reaction of  $\text{Y}_2\text{O}_3$  with  $\text{ZrCl}_4$  in  $\text{LiCl-KCl}$  eutectic melt was investigated by X-ray absorption fine structure (XAFS) technique. The chlorination reaction was observed between 773 K and 823 K as the 1st peak shift of the Fourier transform magnitude function  $|FT(k^3\chi(k))|$ . The peak corresponding to the nearest  $\text{Y}^{3+}\text{-Cl}^-$  correlation was observed in the XAFS analysis at 823 K as the result of the chlorination. It was confirmed that the mixture melts after the reaction is almost equivalent to a molten 5%  $\text{YCl}_3$ -( $\text{LiCl-KCl}$  eutectic) mixture.

*Key words:* XAFS; Molten Salt; Chlorination; Nuclear Fuel Cycle.