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ASPECTS OF

ACTINIDE - SCHIFF BASE CHEMISTRY

*A thesis presented to the
University of Auckland
for the degree of*

Doctor of Philosophy

by

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A B S T R A C T

Complexes of tetravalent uranium and thorium have been prepared with the tetradentate ligands N,N'-ethylenebis(salicylaldimine), N,N'-*o*-phenylenebis(salicylaldimine) and the analogous ligands containing substituent groups in the salicylaldimine benzene rings (i.e. 3-MeO, 3-EtO, 5-Cl, 5-NO₂). Attempts to form bidentate salicylaldimine complexes were impeded by hydrolysis and oxidation; however, the metal complexes with N-Mesalicylaldimine, N-Etsalicylaldimine and N-phenylsalicylaldimine have been isolated. X-ray powder patterns for these complexes are reported.

X-ray structural studies have revealed the salicylaldehyde, N-Mesalicylaldimine, N-Etsalicylaldimine and N,N'-*o*-phenylenebis(salicylaldimine) complexes of thorium to be eight co-ordinate, with the salicylaldimine complexes having distorted square antiprismatic coordination and the salicylaldehyde complex displaying a dodecahedral configuration. U.V., visible and near-I.R. spectra of Schiff-base complexes of thorium, uranium, thallium and lithium are also reported and discussed.

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