# Crystal and Molecular Structure of $[(\eta^5\text{-}C_5H_4SiMe_3)_2LuCl]_2$: A Precursor for the Production of $Lu_2O_3$ Films

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The single crystal X-ray diffraction study of $[(\eta^5\text{-}C_5H_4SiMe_3)_2LuCl]_2$, prepared from $LuCl_3$ and $Na[C_5H_4SiMe_3]$, shows the compound to be a centrosymmetric dimer with two $\eta^5$-bonded cyclopentadienyl rings and two symmetrically bridging chlorine atoms coordinated to each of the two metal centers. The coordination geometry around the lutetium atoms is that of a distorted pseudo tetrahedron. The Lu-C(Cp) distances lie within the narrow range of 2.571 – 2.608 Å. The Lu-Cl bond lengths are 2.639(1) and 2.653(1) Å. The crystal structure shows no significant intermolecular contacts.

*Key words:* Lutetium, Cyclopentadienyl Complex, X-Ray Structure