The single crystal X-ray diffraction study of \([(\eta^5-C_5H_4SiMe_3)_2LuCl)_2\], prepared from LuCl$_3$ and Na[C$_5$H$_4$SiMe$_3$], 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