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Preliminary communication

THE PREPARATION OF FLUOROTRIS(TRIPHENYLARSINE)IRIDIUM(I) AND *trans*-FLUOROCARBONYLBIS(TRIPHENYLARSINE)IRIDIUM(I)

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We wish to describe some interesting observations noted during our attempts to prepare *trans*-fluorocarbonylbis(triphenylarsine)iridium(I). The phosphine analogue, *trans*-$Ir(CO)F(PPh_3)_2$, has been previously prepared by two different methods [1,2].

Vaska and Peone [1] have described the preparation of *trans*-$Ir(CO)F(PPh_3)_2$ from *trans*-$Ir(CO)Cl(PPh_3)_2$, a reaction which involves the methanolic fluoride derivative, $[Ir(CO)(MeOH)(PPh_3)_2]F$, as an intermediate. Application of this method to the analogous arsine derivative resulted in the isolation of an off-white carbonyl-free product, elemental analysis(C, H, F) of which indicated it to be fluorotris(triphenylarsine)iridium(I), m.p. 144—148° C. Although the chloro derivative of this complex, $[Ir(AsPh_3)_3Cl]$, has been prepared from bis(dicyclooctenechloroiridium) and triphenylarsine in petroleum ether [3], the method reported here would appear to be a novel route to compounds of this type.

In contrast, application of Roper's method of preparing *trans*-$Ir(CO)F(PPh_3)_2$, involving the acetonitrile coordinated cation as an intermediate, resulted in the isolation of an authentic specimen of *trans*-$Ir(CO)F(AsPh_3)_2$, which exhibits $\nu(CO)$ 1998 cm^{-1}.

At present the reaction pathway leading to the formation of $[Ir(AsPh_3)_3F]$ is not known; possibly it involves reaction of a $IrF(AsPh_3)_2$ intermediate with $AsPh_3$. Attempts to produce $[Ir(AsPh_3)_3F]$ by refluxing *trans*-$Ir(CO)F(AsPh_3)_2$ with excess $AsPh_3$ in methanol result in the recovery of starting materials.

References

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