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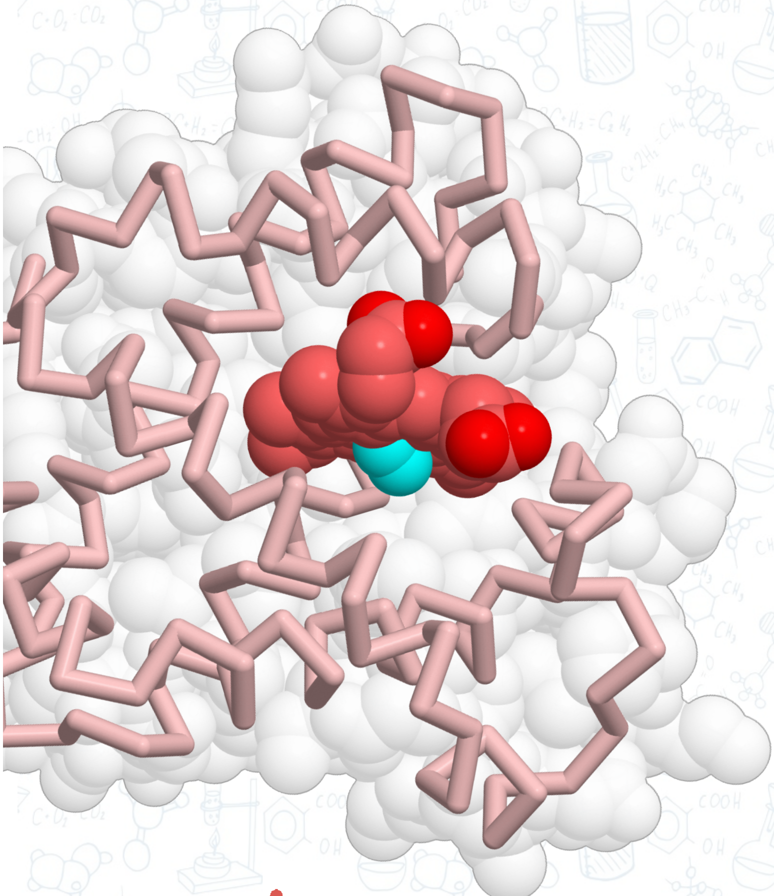

Proceedings

Società Chimica Italiana
Divisione di Chimica Inorganica

ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA

Osmium Diazoalkane Derivatives with Pentamethylcyclopentadienyl Ligand: Synthesis and Reactivity

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Diazoalkane complexes $[Os(\eta^5\text{-}C_5Me_5)(N_2CAr1Ar2)(PPh_3)\{P(OR)_3\}]BPh_4$ (**1, 2**) were prepared by reacting bromo-compounds $OsBr(\eta^5\text{-}C_5Me_5)(PPh_3)[P(OR)_3]$ with diazoalkane $Ar1Ar2CN_2$ in the presence of $NaBPh_4$.

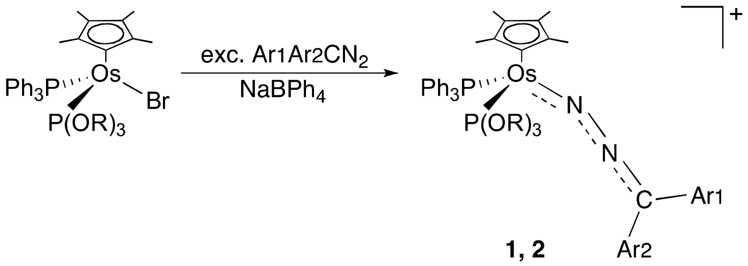

***Figure 1**: R = Me (**1**), Et (**2**); Ar1 = Ar2 = Ph (**a**); Ar1 = Ph, Ar2 = p-tolyl (**b**); Ar1Ar2 = $C_{12}H_8$ (**c**)*

Treatment of complexes **1** and **2** with air afforded dioxygen derivatives $[Os(\eta^5\text{-}C_5Me_5)\text{-}(\eta^2\text{-}O_2)(PPh_3)\{P(OR)_3\}]BPh_4$ (**3, 4**).

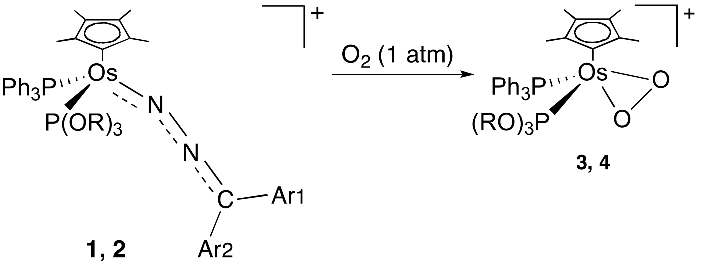

***Figure 2**: R = Me (**3**), Et (**4**); Ar1 = Ar2 = Ph (**a**); Ar1 = Ph, Ar2 = p-tolyl (**b**); Ar1Ar2 = $C_{12}H_8$ (**c**)*

Vinylidene $[Os(\eta^5\text{-}C_5Me_5)\{=C=C(H)R1\}(PPh_3)\{P(OR)_3\}]BPh_4$ and propadienylidene derivatives $[Os(\eta^5\text{-}C_5Me_5)(=C=C=CR1R2)(PPh_3)\{P(OR)_3\}]BPh_4$ were also prepared by allowing complexes **1** and **2** to react with terminal alkynes $HC\equiv CR1$ and $HC\equiv CCR1R2(OH)$, respectively.

All the complexes were characterised spectroscopically (IR and NMR) and by X-ray crystal structure determinations.