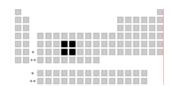
Special Topic E: Quadruple bonds



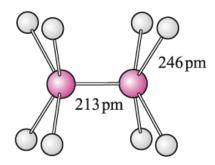


Figure E.1 The structure of $[Re_2Cl_8]^{2-}$.

Table E.1 Some compounds with electron-rich M-M bonds (from C&W, 5th ed.)

Compound	Electron configuration	Bond order	Bond length (Å)	Notes
	$\sigma^2\pi^4\delta^2\delta^{*2}$	3	2.182(1)	b
Me 7- 0 0 0 Cl-Ru=Ru-Cl 0 0 0	$\sigma^2\pi^4\delta^2\delta^*\pi^{*2}$	$2\frac{1}{2}$	2.267(2)	c
$\begin{array}{c c} Et & \\ C & O & O \\ \hline O & O & O \\ Me_2CO - R\ddot{u} = R\ddot{u} - OCMe_2 \\ \hline O & O & O \end{array}$	$\sigma^2\pi^4\delta^2\delta^{*2}\pi^{*2}$	2	2.260(3)	d
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$\sigma^2\pi^4\delta^2\delta^{*2}\pi^{*3}$	1.5	2.316(2)	c
Ph C NPh N Rh Rh Rh N N N N	$\sigma^2\pi^4\delta^2\delta^{*2}\pi^{*4}$	1	2.389(1)	e
$\begin{array}{c c} O_2 \\ O \\ O$	$\sigma^2 \delta^4 \delta^2 \delta^{*2} \pi^{*4}$	1	2.461(1)	f

[&]quot;In structures with bridging ligands, only one is shown in full.

^bSee ref. 77; conformation is staggered.

^eSee ref. 65

^dG. Wilkinson et al., J. Chem.Soc., Dalton Trans., 1985, 2321.

^eJ. L. Bear et al., J. Am. Chem. Soc., 1985, **107**, 7195.

^fSee ref. 76.