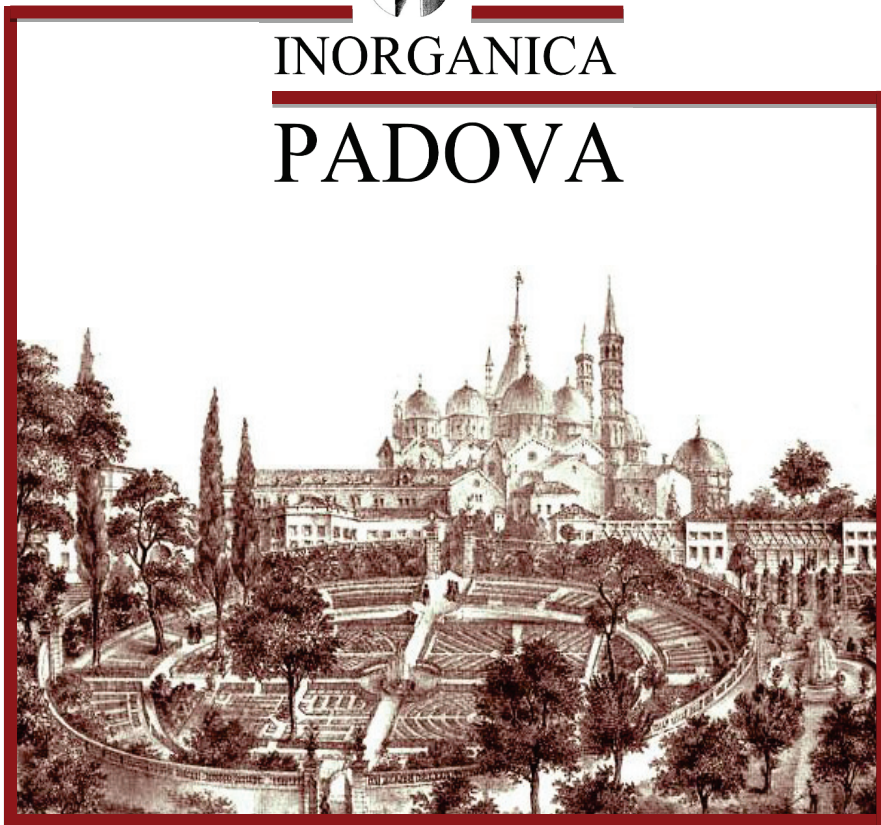


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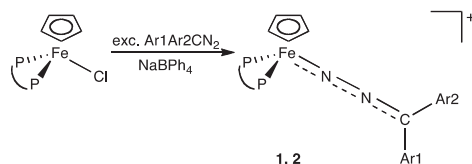
Diazoalkane Complexes of Iron

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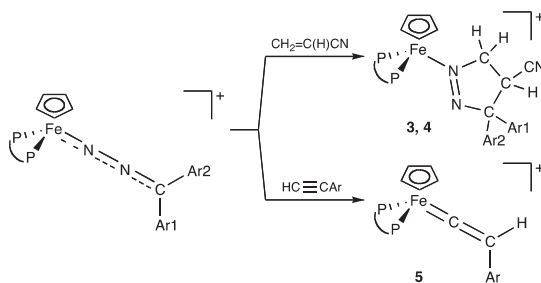
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Diazoalkane complexes $[\text{Fe}(\eta^5\text{-C}_5\text{H}_5)(\text{N}_2\text{CAr}_1\text{Ar}_2)(\text{P-P})]\text{BPh}_4$ (**1**, **2**) were prepared by allowing chloro compounds $\text{FeCl}(\eta^5\text{-C}_5\text{H}_5)(\text{P-P})$ to react with $\text{Ar}_1\text{Ar}_2\text{CN}_2$ in the presence of NaBPh_4 .



$\text{P-P} = \text{Ph}_2\text{PCH}_2\text{CH}_2\text{PPh}_2$ (dppe) (**1**), $\text{Ph}_2\text{PCH}_2\text{CH}_2\text{CH}_2\text{PPh}_2$ (dppp) (**2**); $\text{Ar}_1 = \text{Ar}_2 = \text{Ph}$ (**a**); $\text{Ar}_1 = \text{Ph}$, $\text{Ar}_2 = p\text{-tolyl}$ (**b**); $\text{Ar}_1\text{Ar}_2 = \text{C}_{12}\text{H}_8$ (**c**).

Treatment of diazoalkane complexes **1**, **2** with acrylonitrile give rise to (3+2) cycloaddition, affording 3*H*-pyrazole derivatives $[\text{Fe}(\eta^5\text{-C}_5\text{H}_5)\{\text{N}=\text{NC}(\text{Ar}_1\text{Ar}_2)\text{CH}(\text{CN})\text{CH}_2\}(\text{P-P})]\text{BPh}_4$ (**3**, **4**), whereas reaction with terminal alkyne $\text{HC}\equiv\text{CAr}$ yields vinylidene derivatives $[\text{Fe}(\eta^5\text{-C}_5\text{H}_5)\{\text{C}=\text{C}(\text{H})\text{Ar}\}(\text{dppe})]\text{BPh}_4$ (**5**).



The complexes were characterised spectroscopically (IR, NMR) and by X-ray crystal structure determination of $[\text{Fe}(\eta^5\text{-C}_5\text{H}_5)\{\text{N}_2\text{C}(\text{C}_{12}\text{H}_8)\}(\text{dppe})]\text{BPh}_4$.