

硅基取代及硅桥连双环戊二烯基四羰基二铁与HgCl₂的反应及产物结构研究

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摘要 二(硅基取代环戊二烯基)四羰基二铁化合物 $[\eta^5\text{-RC}_5\text{H}_4\text{Fe}(\text{CO})]_2(\mu\text{-CO})_2(\text{R}=\text{SiMe}_3, 1; \text{Si}_2\text{Me}_5, 2)$ 与HgCl₂反应得到的预期的Fe-Fe键被断裂的铁氯化物6(R=SiMe₃)和8(R=Si₂Me₅)及铁氯汞化物5(R=SiMe₃)和7(R=Si₂Me₅)。硅桥连的类似物 $\text{R}^1[\eta^5\text{-C}_5\text{H}_4\text{Fe}(\text{CO})]_2(\mu\text{-CO})_2(\text{R}^1=\text{SiMe}_2, 3; \text{SiMe}_2\text{OSiMe}_2, 4)$ 。由上述反应除得到预期产物外,还分离到相应的歧化产物 $\text{R}^1[[\eta^5\text{-C}_5\text{H}_4\text{Fe}(\text{CO})_2\text{HgCl}](\text{R}^1=\text{SiMe}_2, 10; \text{SiMe}_2\text{OSiMe}_2, 13)$ 与 $\text{R}^1[\eta^5\text{-C}_5\text{H}_4\text{Fe}(\text{CO})_2\text{Cl}]_2(\text{R}^1=\text{SiMe}_2, 11; \text{SiMe}_2\text{OSiMe}_2, 14)$,讨论了歧化产物的生成原因。对产物5-14的结构用元素分析、IR、¹H NMR进行了表征,并测定了5的晶体结构。5为单斜晶系,空间群P2₁/n, a=1.1648(3), b=0.7484(4), c=1.6823(5)nm, β=106.55(2)°, V=1.405(2)nm³, Z=4, Dx=2.29g·cm⁻³。

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Reaction of silyl-substituted and sila-bridged bicyclopentadienyl tetracarbonyl diiron with HgCl₂ and structures of the products

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Abstract Reactions of bis(silylcyclopentadienyl) tetracarbonyl diiron compounds $[\eta^5\text{-RC}_5\text{H}_4\text{Fe}(\text{CO})]_2(\mu\text{-CO})_2(\text{R}=\text{SiMe}_3, 1; \text{Si}_2\text{Me}_5, 2)$ with HgCl₂ resulted in cleavage of Fe-Fe bond and gave expected products 5-8, while from the corresponding reactions of bridged analogues $\text{R}^1[\eta^5\text{-RC}_5\text{H}_4\text{Fe}(\text{CO})]_2(\mu\text{-CO})_2(\text{R}^1=\text{SiMe}_2, 3; \text{SiMe}_2\text{OSiMe}_2, 4)$, unexpected products of disproportionation were isolated, as well as the expected ones. The occurrence of the disproportionation was investigated. All the products were characterized by IR, ¹H NMR and elemental analysis. The crystal structure of 5 was determined. The crystals of 5 are monoclinic, space group P2₁/m with a=1.1648(3), b=0.7484(4), c=1.6823(5)nm and β=106.55(2)°, V=1.405(2)nm³, Z=4, Dx=2.29g·cm⁻³.

Key words [INFRARED SPECTROPHOTOMETRY](#) [ELEMENTAL ANALYSIS](#) [CYCLOPENTADIENE P](#) [IRON COMPLEX](#) [DISPROPORTIONATION REACTION](#) [PROTON MAGNETIC RESONANCE SPECTROMETRY](#) [CARBONYL COMPOUNDS](#) [MERCURY CHLORIDE](#)

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