

## Interconversion of conjugated and nonconjugated polyolefin cobalt complexes in two oxidation states : an electrochemical and NMR study.

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The kinetics of interconversion between the conjugated (1,3) and nonconjugated (1,5) isomers of cyclooctatetraene (cot) complexes of CpCo [Cp = C<sub>5</sub>H<sub>5</sub>] 1 and \*CpCo [\*Cp = C<sub>5</sub>Me<sub>5</sub>] 2 have been studied. Dynamic NMR studies were employed for neutral CpCo(cot) and gave a rate of 3 s<sup>-1</sup> at 370 K, extrapolated to 4 X 10<sup>-3</sup> s<sup>-1</sup> at 298 K. The permethylated complex isomerizes more slowly, k = 3 X 10<sup>-4</sup> s<sup>-1</sup> at 370 K. However, fast fourier transform ac polarography results show that the monoanions of CpCo(cot) and \*CpCo(cot) isomerize at the same fast rate, 2 X 10<sup>3</sup> s<sup>-1</sup> at 298 K. An explanation is offered in terms of the lifting of symmetry restrictions to the simplest molecular isomerization motion in the anion radicals. The dibenzocyclooctatetraene complex CpCo( 1,5-dbcot) (3) reduces to a stable anion which shows no tendency to isomerize. This is explained by a likely change in electronic ground states of [CpCo(cot)]<sup>TM</sup> and [CpCo(dbcot)]<sup>-</sup>, a conclusion supported by ESR results.

### Adres publiczny

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