

二核遷移金属錯体による酸素活性化機構の解明

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雑誌名	平成15(2003)年度 科学研究費補助金 特定領域研究 研究成果報告書概要
巻	1999 2002
ページ	3p.
発行年	2005-04-18
URL	http://doi.org/10.24517/00060747



2003 Fiscal Year Final Research Report Summary

Investigations of dioxygen activation mechanisms by dimetal complexes

Research Project

Project/Area Number

11228202

Research Category

Grant-in-Aid for Scientific Research on Priority Areas

Allocation Type

Single-year Grants

Review Section

Science and Engineering

Research Institution

Kanazawa University

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Project Period (FY)

1999 - 2002

Keywords

Dioxygen active species / Oxidation reaction / Dioxygen activation / Nickel complexes / Iron complexes / Copper complexes / High valent metal complexes / Crystal structures

Research Abstract

<Reversible four electron redox conversion of dioxygen by copper complexes > A series of copper(I) complexes ($[\text{Cu}(\text{L})]^+$) having tripodal tetradentate ligands (L) was synthesized and reactivity of their complexes with O_2 was investigated. Reaction of copper(I) complexes ($[\text{Cu}(\text{L})]^+$) generated bis(μ -oxo)dicopper(III) complexes, which showed reversible conversion to copper(I) complexes by bubbling of N_2 . Furthermore, it was also found that bis(μ -oxo)dicopper(III) complexes have monooxygenase activity for the supporting ligands. Reactivity can be modulated by stereochemical electronic effect of the supporting ligands

<Reaction intermediates of nickel complexes having a variety of dioxygen active species formed by the reaction with H_2O_2 > Reaction of a bis(μ -hydroxo)Ni(II)₂ having a series of tetradentate tripodal ligands having methyl substituents with H_2O_2 at low temperature resulted in a successive formation a bis(μ -oxo)Ni(III)₂ a bis(μ -superoxo)Ni(II)₂, and a bis(μ -alkylperoxo)Ni(II)₂ complexes as the intermediates for the conversion of a methyl substituent of ligands to carboxylate and alkoxide ligands

<Reversible O-O bond cleavage and formation of a peroxo group of an iron(III) complex having a peroxycarbonate> A peroxycarbonate iron(III) complex ($[\text{Fe}(\text{qn})_2(\text{O}_2\text{C}(\text{O})\text{O})]^{-(1)}$) was synthesized. The complex is stable at -35°C in acetonitrile, whereas it decomposes at 20°C. Decomposition of an ^{18}O -labeled $[\text{Fe}(\text{qn})_2(^{18}\text{O}-^{18}\text{O}-^{18}\text{O})]^{-(1)}$ -complex ($1-^{18}\text{O}-^{18}\text{O}$) at 20°C in acetonitrile was investigated by resonance Raman and ESI-MS spectroscopies. They

revealed that the $\mu_3\text{-}\eta^1;\eta^2$ Peroxo Bridge between Two $\text{Co}^{\text{II}}\text{Pb}^{\text{II}}$ Dinuclear Units and Hydrolytic Conversion into a Hydroxo-Bridged $\text{Co}^{\text{III}}\text{Pb}^{\text{II}}$ Complex"Chemistry. Letters. 763-764 (1999)

Research Products (36 results)

All Other

All Publications

[Publications] H.Furutachi, M.Suzuki, et al.: "A Rare $\mu_3\text{-}\eta^1;\eta^2$ Peroxo Bridge between Two $\text{Co}^{\text{II}}\text{Pb}^{\text{II}}$ Dinuclear Units and Hydrolytic Conversion into a Hydroxo-Bridged $\text{Co}^{\text{III}}\text{Pb}^{\text{II}}$ Complex"Chemistry. Letters. 763-764 (1999)

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URL: https://kaken.nii.ac.jp/report/KAKENHI-PROJECT-11228202/112282022003kenkyu_seika_hokoku

Published: 2005-04-18