Electrocatalytic properties of a dinuclear cobalt(III) coordination compound in molecular oxygen reduction reaction.

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Streszczenie

A new dinuclear cobalt(III) coordination compound, [Co2L(μ-N3)(N3)2]·CH3OH (1), was synthesized and characterized by elemental analysis, spectro-scopic methods, and single-crystal X-ray analysis in which H3Lisaheptadentate ligand obtained by the condensation of triethylenetetramine with5-bromo-2-hydroxybenzaldehyde. X-ray analysis revealed that two cobalt(III)ions have distorted octahedral geometry and are connected together by aphenoxy and an azide bridging ligand. The catalytic activity of compound 1 foroxygen (O2) reduction reaction was investigated. Compound 1 can efficientlycatalyze the reduction of O2by a weak electron donor, ferrocene (Fc), at thepolarized water–1,2-dichloroethane interface. It was found that compound1 can catalyze O2reduction to H2O2, whereas in the presence of Fc, it can cata-lyze the reduction of O2to water.

Słowa kluczowe

dinuclear cobalt(III) coordination compound, ferrocene, liquid–liquid interface, oxygen reduction reaction

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