Oxidative coupling of 2-naphthol catalyzed by a new methoxido bridged dinuclear oxidovanadium(V) complex.

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A new dinuclear oxidovanadium(V) complex, $[(VO)_2(\mu\text{-}L\text{-}\kappa^4O,N,N,O)(\mu\text{-}OCH_3)_2(OMe)_2]\cdot CH_3OH$ (**1**), is synthesized by the reaction of V_2O_5 with 1,1′-((1*E*,1′*E*)-hydrazine-1,2-diylidenebis(methanylylidene))bis(naphthalen-2-ol) (**H_2L**) in methanol. **H_2L** is synthesized by two different methods: (i) from the reaction of hydrazine hydrate with 2-hydroxy-1-naphthaldehyde and (ii) from the reaction of hydrazine hydrate with 2-naphthol in the presence of formaldehyde (Mannich condensation). The ligand and its vanadium complex are characterized by elemental analysis, spectroscopic methods (FT-IR, NMR and UV–Vis) and their structures are determined by single crystal X-ray analysis. X-ray studies show that **1** is a neutral dinuclear complex of oxidovanadium(V) in which two vanadium(V) ions are connected by two methoxido bridging groups. The Schiff base ligand is coordinated to both vanadium centers by two NO-donor sets. Complex **1** is employed as initiator for oxidative coupling of 2-naphthol to produce BINOL. The effect of temperature, reaction atmosphere and solvent in catalytic reaction is studied. According to the obtained results, a mechanism is proposed for catalytic oxidative coupling reaction in the presence of complex **1**.

Słowa kluczowe

Dinuclear oxidovanadium(V), Schiff base ligand, Oxidative coupling, BINOL synthesis, Catalytic coupling

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