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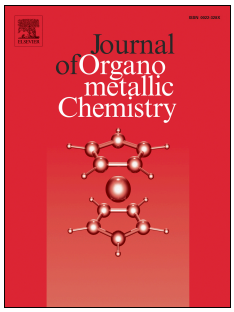

Synthesis, characterization and aggregation properties of non-peripherally (1R,2R)-1,2-di(naphthalen-1-yl)ethane-1,2-diol substituted optically active zinc phthalocyanine and its catalytic application in enantioselective ethylation of aldehydes

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Synthesis, characterization and aggregation properties of non-peripherally (1*R*,2*R*)-1,2-di(naphthalen-1-yl)ethane-1,2-diol substituted optically active zinc phthalocyanine and its catalytic application in enantioselective ethylation of aldehydes

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Abstract

The novel optically active zinc(II) phthalocyanine having four (1*R*,2*R*)-1,2-di(naphthalen-1-yl)ethane-1,2-diol **1** at non-peripheral positions has been synthesized in a condensation using optically active phthalonitrile **2**, and characterized by ^{1}H NMR, IR, UV-Vis, Circular Dichroism (CD) and HRMS-TOF spectral data. The spectral and aggregation properties of novel optically active zinc(II) phthalocyanine **3** were investigated. The aggregation behavior of phthalocyanine **3** was investigated at different concentrations in *N*,*N*-dimethylformamide and tetrahydrofuran. No aggregation behavior was observed in both solvents at concentrations between 10 x 10^{-6} and 2 x 10^{-6} mol $dm^{-3.}$ The applicability of these chiral ligands **1-3** was evaluated in the enantioselective diethyl zinc addition of aldehydes. The addition of diethylzinc to 2-methoxybenzaldehyde was achieved with excellent enantioselectivity (87% *ee*, 80% yield) under catalysis with (1*R*,2*R*)-1,2-di(naphthalen-1-yl)ethane-1,2-diol **1.** At the same condition, optically active zinc(II)

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