

สมบัติทางเคมีไฟฟ้าและสมบัติการเร่งปฏิกิริยาของสารประกอบเชิงซ้อนโลหะทรานซิชันซีฟเบส

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ELECTROCHEMICAL AND CATALYTIC PROPERTIES OF TRANSITION
METAL-SCHIFF BASE COMPLEXES

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 SUJITTRA TONGKRATOK: ELECTROCHEMICAL AND CATALYTIC
 PROPERTIES OF TRANSITION METAL-SCHIFF BASE COMPLEXES.
 THESIS ADVISOR: ASST. PROF. WARINTHORN CHAVASIRI, Ph.D.
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Electrochemical and catalytic properties of metal Schiff base complexes as catalyst in cyclohexane oxidation were thoroughly investigated. Cyclic voltammetry was performed using either glassy carbon and boron-doped diamond electrode, silver wire as a reference electrode and platinum wire as an auxillary electrode. The results of cyclic voltammetry revealed that metal Schiff base complexes which exhibited reversible and quasi-reversible reactions provided better yield of the desire products than other transition metal Schiff base complexes studied. In addition, the redox reaction employing glassy carbon and boron-doped diamond electrodes was different because the electrode-reaction kinetics of boron-doped diamond electrode was slow. The kinetic study of cyclohexane oxidation was found in good agreement with the results that gained from cyclic voltammetry.

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LIST OF ABBREVIATIONS

| | |
|------------------|----------------------------|
| Fig | figure |
| °C | degree celsius |
| atm | atmosphere |
| mmol | millimole |
| NMR | nuclear magnetic resonance |
| IR | Infrared spectroscopy |
| g | gram (s) |
| mL | milliliter (s) |
| min | minute (s) |
| h | hour (s) |
| cm ⁻¹ | unit of wavenumber |
| ppm | part per million |
| <i>J</i> | coupling constant |
| m | multiplet (NMR) |
| dd | doublet of doublet (NMR) |
| d | doublet (NMR) |
| s | singlet (NMR) |
| m.p. | melting point |
| dec | decomposed |
| lit | literature |
| % | percent |
| R _f | retardation factor |

LIST OF ABBREVIATIONS (cont.)

| | |
|-------------------------------|---|
| haen | Bis(2-hydroxyacetophenone)- <i>N, N'</i> -ethylenediimine |
| sac | <i>N</i> -salicylalidene-2-anthranilic acid |
| sap | <i>N</i> -salicylalidene-2-aminophenol |
| salen | Bis(salicylaldehyde)- <i>N, N'</i> -ethylenediimine |
| salophen | Bis(salicylaldehyde)- <i>N, N'</i> -trimethylenediimine |
| H ₂ O ₂ | hydrogen peroxide |
| TBHP | <i>tert</i> -butylhydroperoxide |