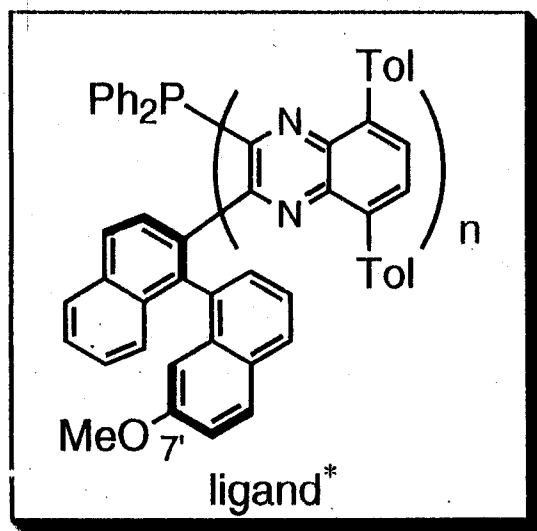
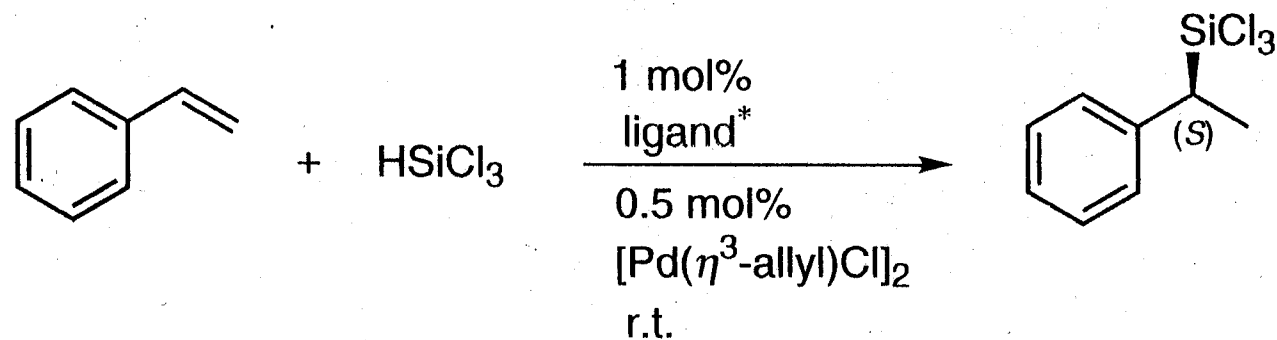
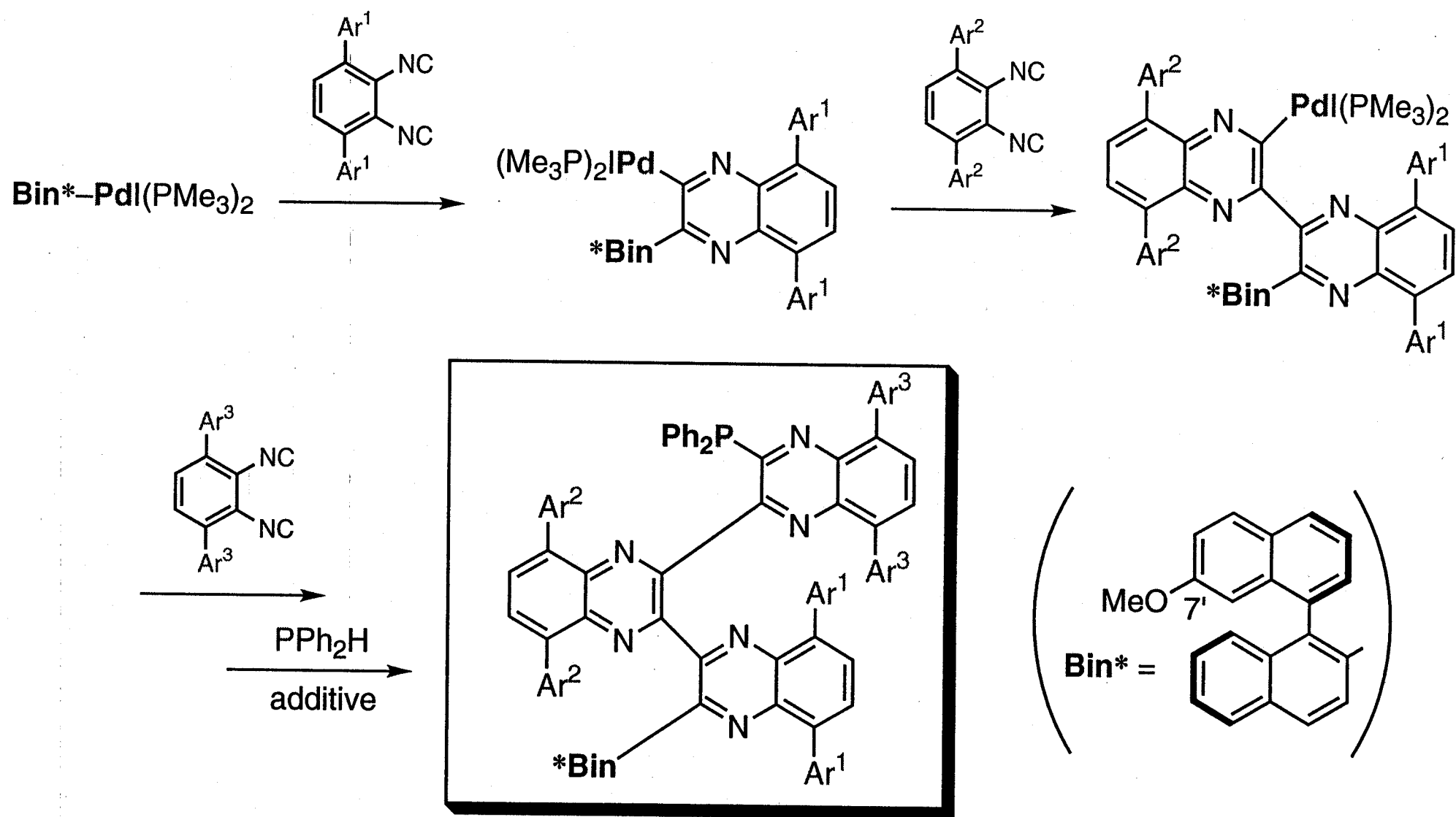


# Application to Asymmetric Hydrosilylation of Styrene with (Oligoquinoxaliny)phosphines with Various Oligomerization Degree

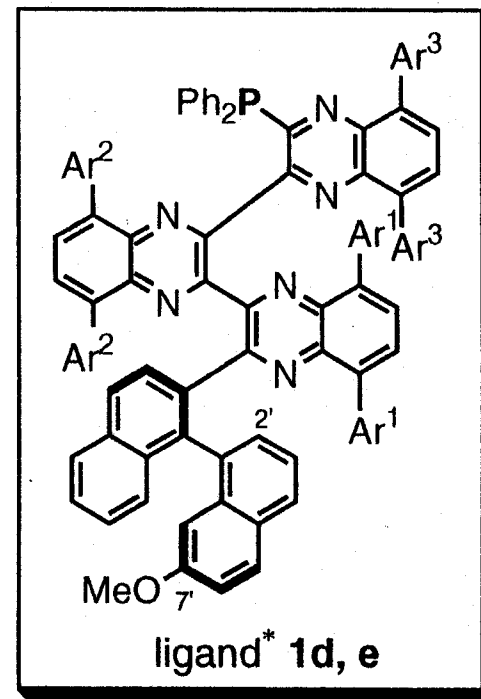
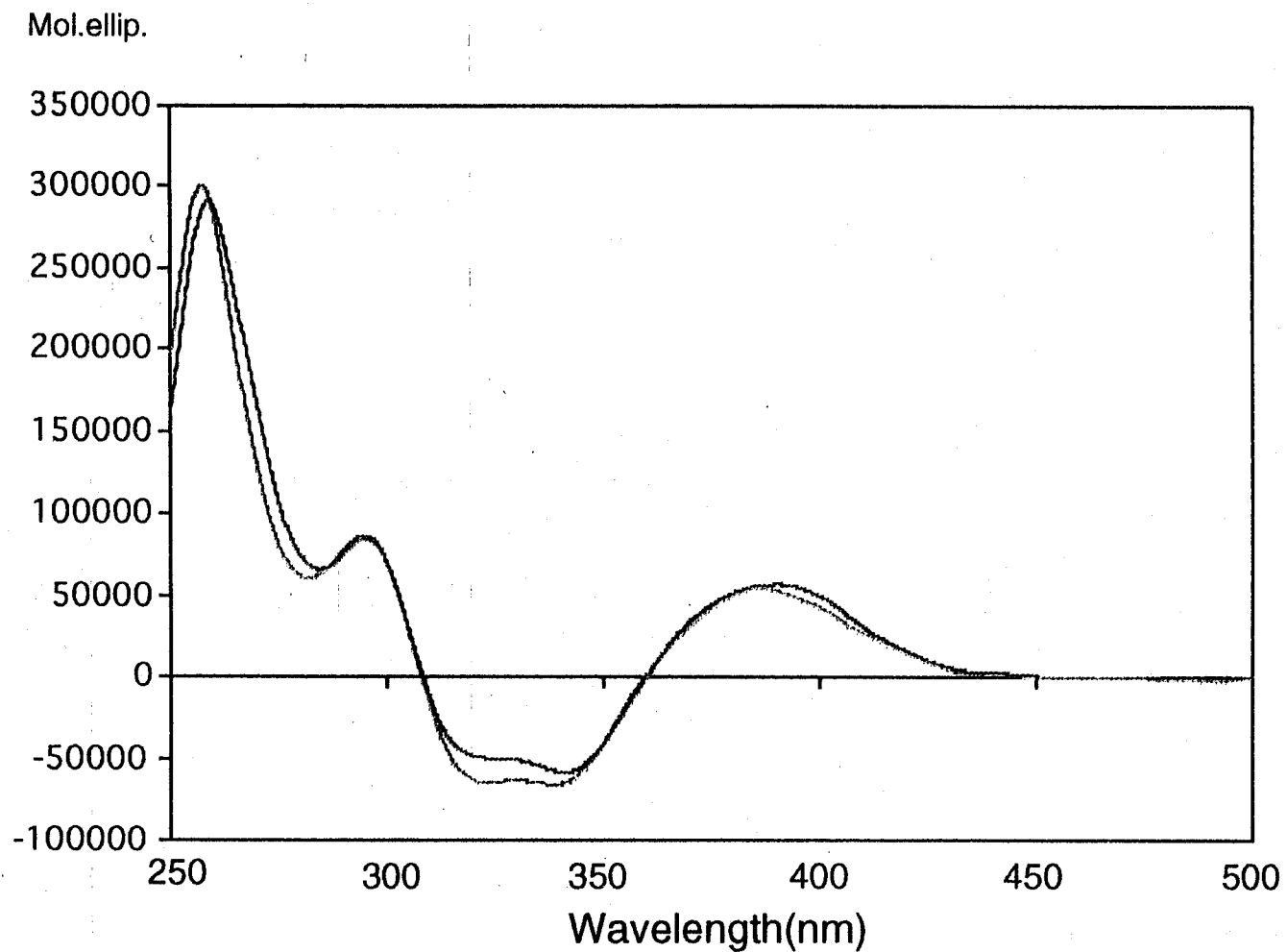


n	yield (%)	ee (%)
1	99	-3
2	84	-17
3	99	25
4	99	69
5	no rxn	---
6	no rxn	---

# Stepwise Synthesis of (Terquinoxalynyl)phosphine Complexes



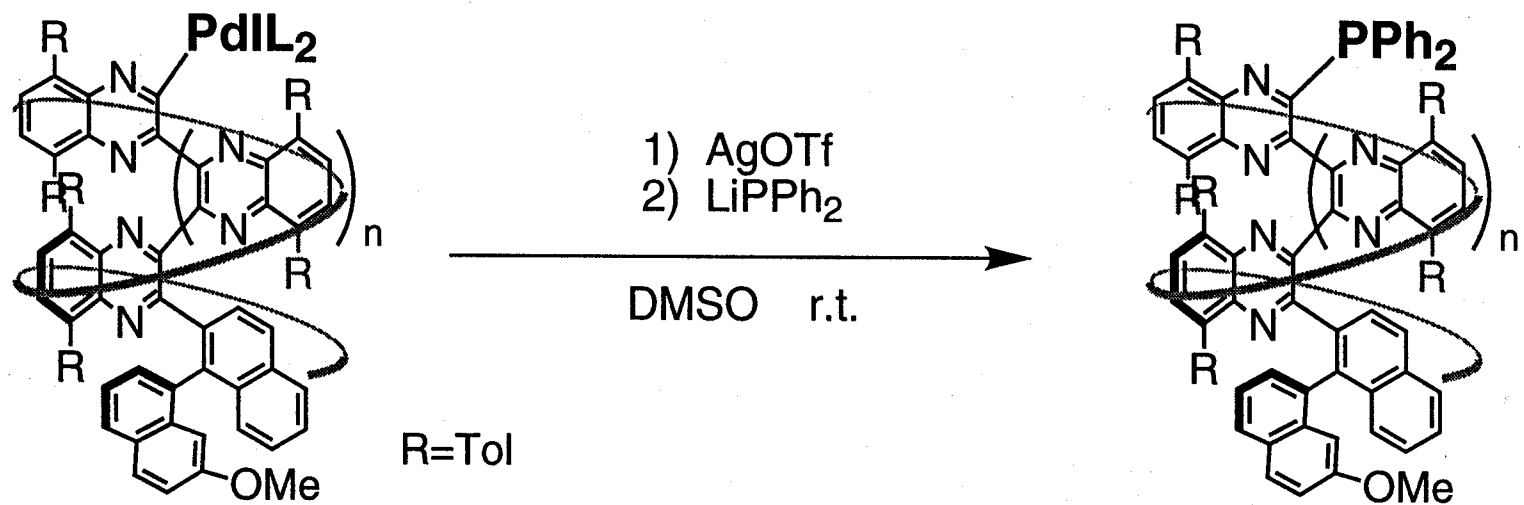
# CD Spectra



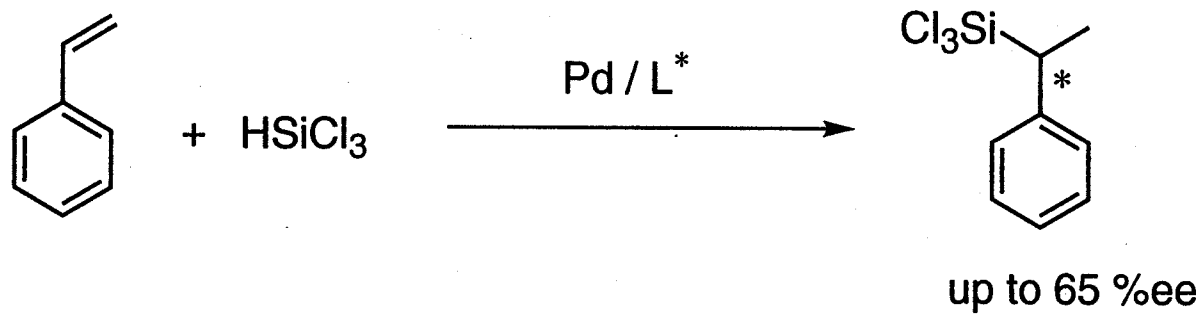
**1e** : Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>3</sup> = *p*-Tol, *p*-TMSC<sub>6</sub>H<sub>4</sub>, *p*-TMSC<sub>6</sub>H<sub>4</sub> (71%ee)

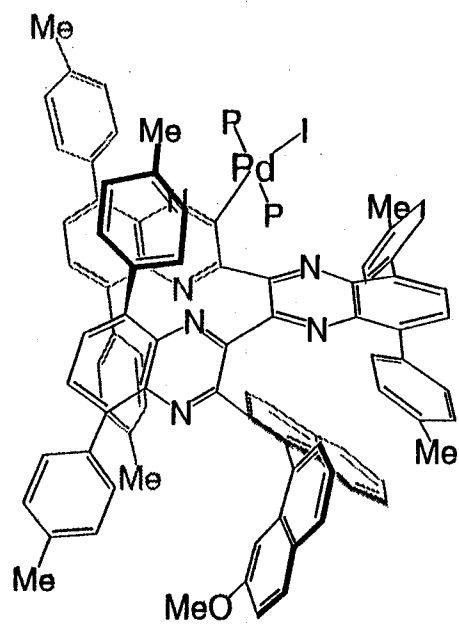
**1d** : Ar<sup>1</sup>, Ar<sup>2</sup>, Ar<sup>3</sup> = *p*-TMSC<sub>6</sub>H<sub>4</sub>, *p*-Tol, *p*-TMSC<sub>6</sub>H<sub>4</sub> (9%ee)

## Synthesis of Monodentate Phosphine Ligand Having Helical Chirality



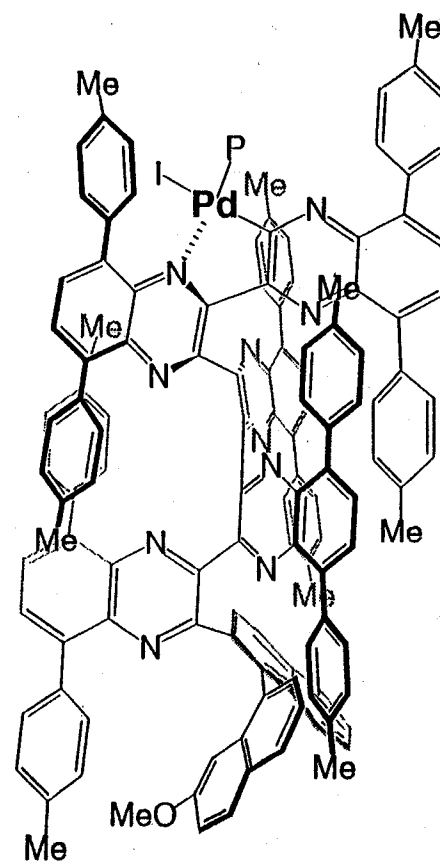
## Asymmetric Hydrosilylation of Styrene by Use of Monodentate Phosphine Ligands Having Helical Chirality





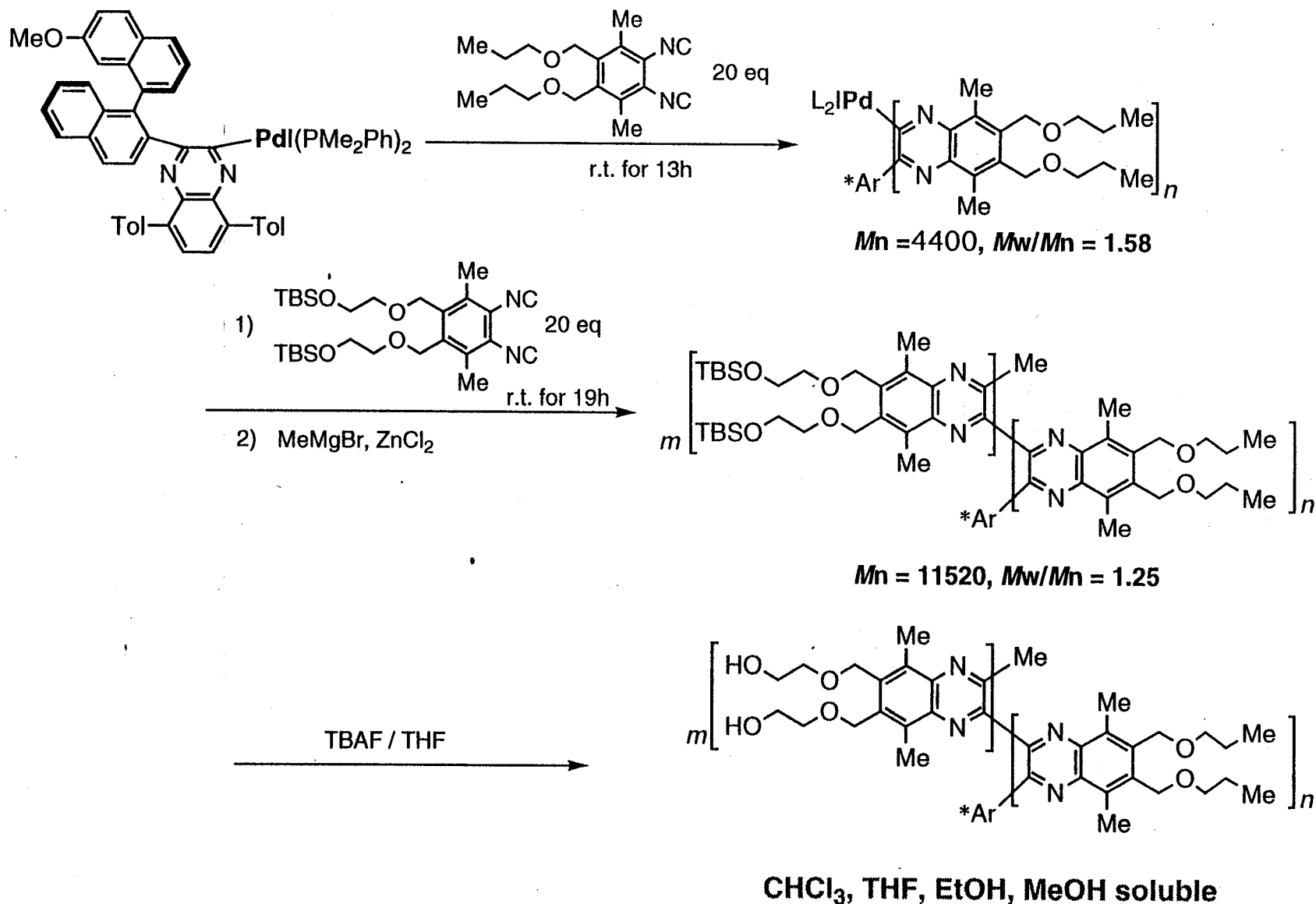
$n = 3$

(P = Me<sub>3</sub>P)

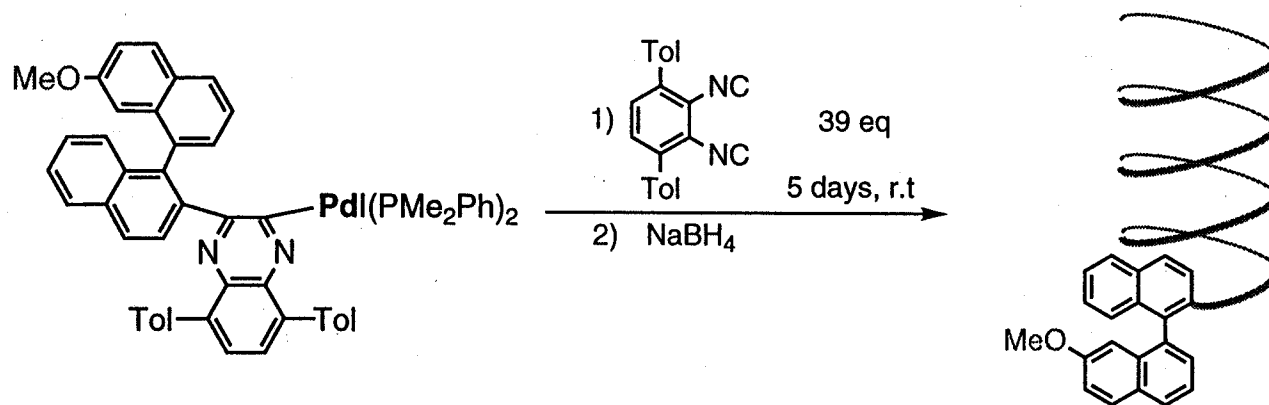


$n = 5$

# Block Polymerization of 1,2-Diisocyanobenzenes with Different Side-chains

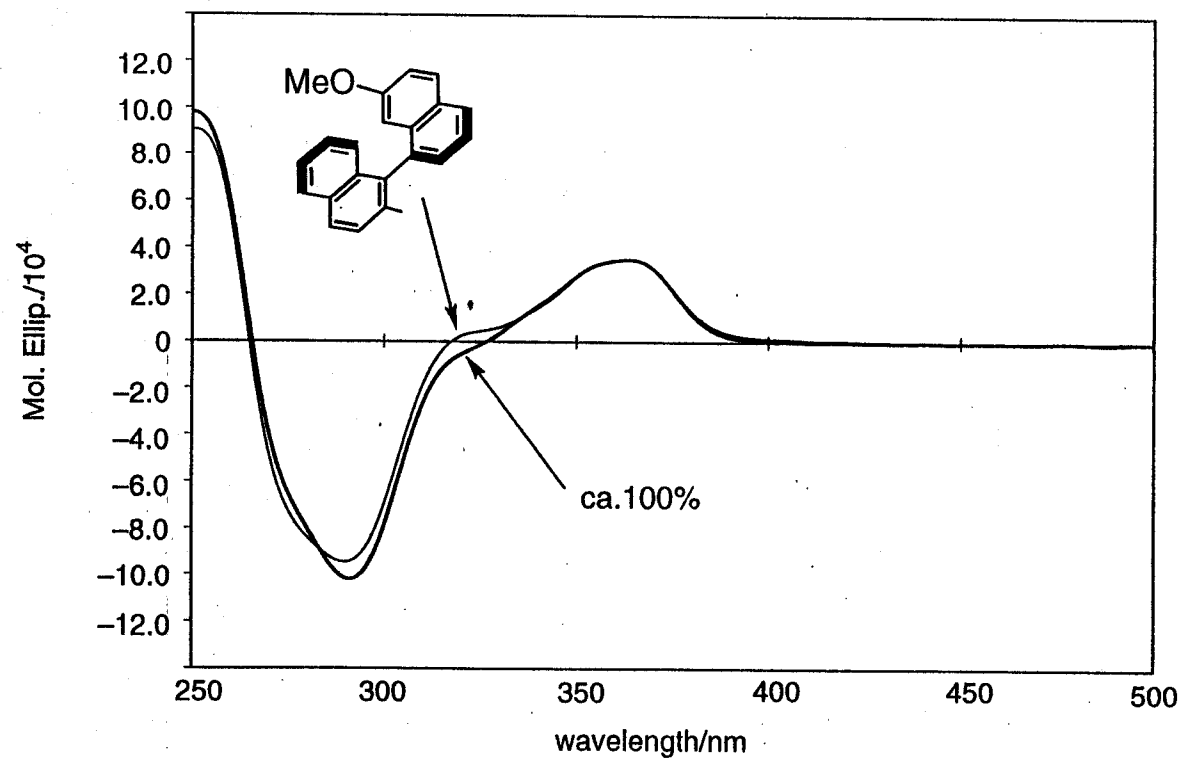
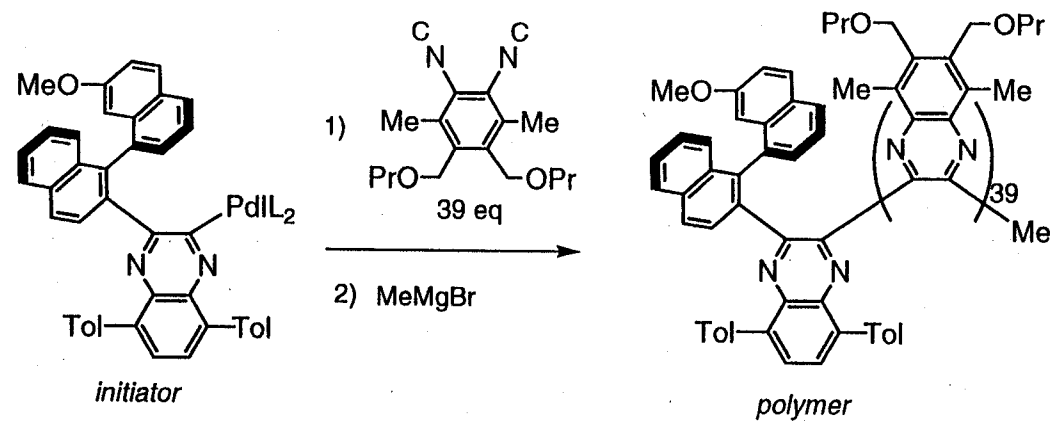


## Asymmetric Polymerization of 1,2-Diisocyanobenzenes with 7'-Methoxybinaphthalene Initiators



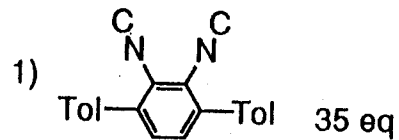
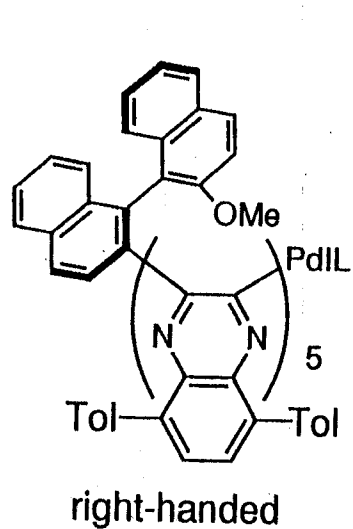
entry	Binaphthyl	polymer (yield/%)	ee (config)	$M_n / 10^3$	$M_w / M_n$
1	( <i>m</i> )	64	>95 ( <i>P</i> )	8.92	1.47
2	( <i>p</i> )	70	>95 ( <i>M</i> )	6.39	1.28

# Highly Screw-Sense Selective Polymerization Using 7'-Methoxybinaphthylpalladium





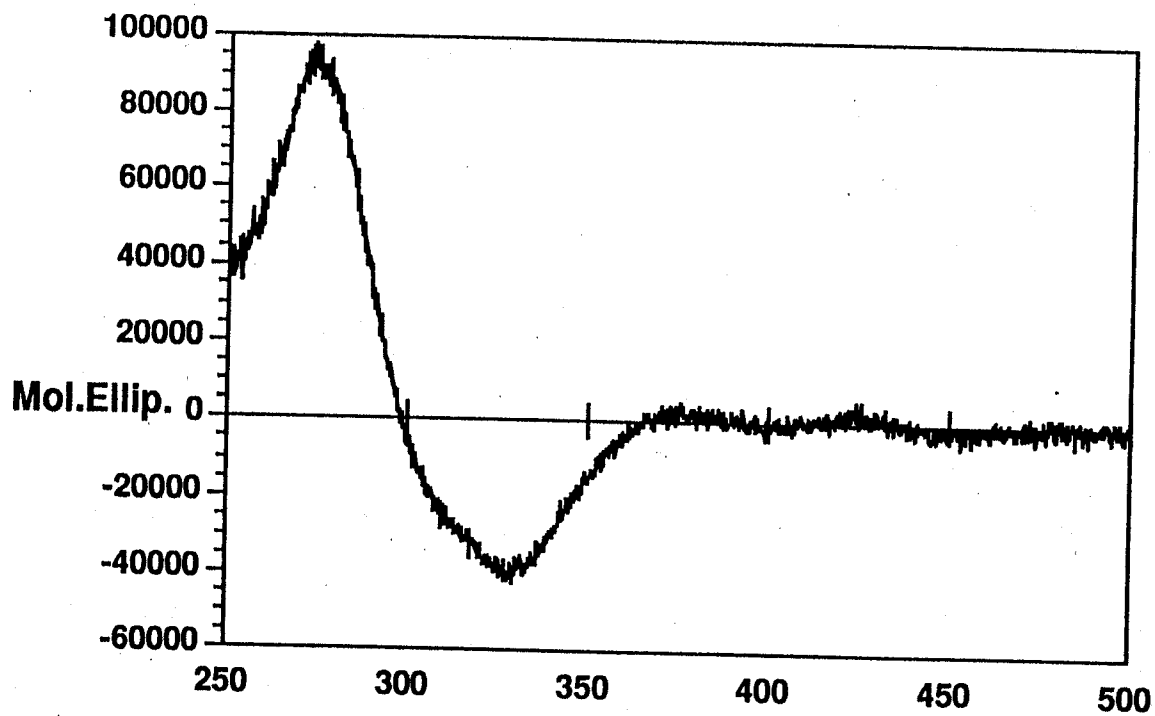
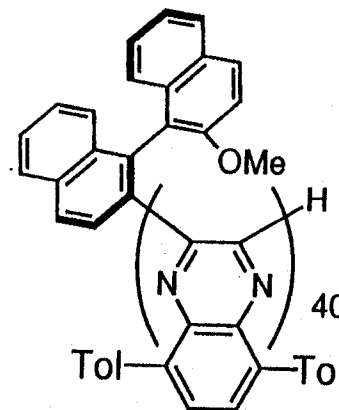
# Polymerization from Pentamer



5 days, r.t



**Helix-induced  
Screw-sense Selection**



CD spectrum

wavelength (nm)

