

Experimental

All reactions were carried out under nitrogen in a Vacuum Atmosphere glovebox or using standard Schlenk techniques. Oxygen levels(<2 ppm) were monitored by diethyl zinc (1 M solution in hexanes). Solvents were reagent grade or better and dried by passage over activated alumina or by distillation from sodium benzophenone , degassed , and stored over activated molecular sieves. $\text{LnCl}_3 \cdot 3(\text{THF})$ and dilithiotetraphenylporphyrin were prepared according to literature procedures. NMR solvents were used as received from Cambridge Isotopes. Elemental analysis was performed by Complete Analysis Laboratories of Parsippany, NJ.

YbTPPCl(DME). In the glove box was combine $\text{YbCl}_3 \cdot 3(\text{THF})$ (2.755 g, $5.99 \cdot 10^{-3}$ mol) and $(\text{LiDME})_2\text{TPP}$ (4.861 g, $5.99 \cdot 10^{-3}$ mol). The reaction was brought out to the Schlenk line where 150 ml of toluene was added and the reaction was then brought to reflux under a flow of nitrogen utilizing a reflux condenser attached to a oil bubbler. After 4 hours the condenser was removed and the lithium chloride was separated from the solution by hot filtration. The residue was washed twice with dichloromethane and was combined with the toluene solution. The solvent mixture was then reduced to 50 ml and chilled on ice, where upon a red purple crystalline material (3.930 g, $4.313 \cdot 10^{-3}$ mol) precipitated and was isolated by filtration. The mother liquor was then condensed to 25 ml and cooled to -78°C affording an additional amount (.4340 g, $4.744 \cdot 10^{-4}$ mol) of precipitate. The two fractions were combined and dissolved in hot toluene, the solution was then cooled, layered with pentane, and cooled to 0°C yielding 4.364g(79.9%). This procedure was repeated once more to yield the material which was used for analysis. Xray quality crystals were grown by the slow evaporation of chloroform under inert atmosphere. Anal. Calcd. C, 63.26; H, 4.20; N, 6.15. Found C, 64.25; H, 3.62; N, 5.85 UV-Visible CH_2Cl_2 [λ_{max} , nm] 421, 514, 550, 586, 624

TmTPPCl(DME). Procedure is the same as that for Yb complex. Starting with 2.80 g ($6.16 \cdot 10^{-3}$ m) of $\text{TmCl}_3 \cdot 3(\text{THF})$ and finishing with 4.72g ($5.21 \cdot 10^{-3}$ m, 84.6%) of the porphyrin complex. Anal. Calcd. C, 63.55; H, 4.22; N, 6.18 Found: C, 65.11; H, 4.48; N, 5.90 UV-Visible CH_2Cl_2 [λ_{max} , nm] 420, 514, 551, 586, 624

ErTPPCl(DME). Procedure is the same as that for Yb complex. Starting with 2.78 g ($6.16 \cdot 10^{-3}$ m) of $\text{ErCl}_3 \cdot 3(\text{THF})$ and finishing with 4.21g ($4.65 \cdot 10^{-3}$ m, 76.0%) of the porphyrin complex. Anal. Calcd. C, 63.66; H, 4.23; N, 6.19 Found: C, 63.59; H, 4.14; N, 5.94 UV-Visible CH_2Cl_2 [λ_{max} , nm] 420, 514, 551, 586, 624

HoTPPCl(DME). Procedure is the same as that for Yb complex. Starting with 2.778 g ($6.16 \cdot 10^{-3}$ m) of $\text{HoCl}_3 \cdot 3(\text{THF})$ and finishing with 4.14g ($4.57 \cdot 10^{-3}$ m, 74.3%) of the porphyrin complex. Anal. Calcd. C, 63.83; H, 4.24; N, 6.20 Found C, 63.92; H, 4.17; N, 6.24 UV-Visible CH_2Cl_2 [λ_{max} , nm] 420, 513, 551, 587, 624