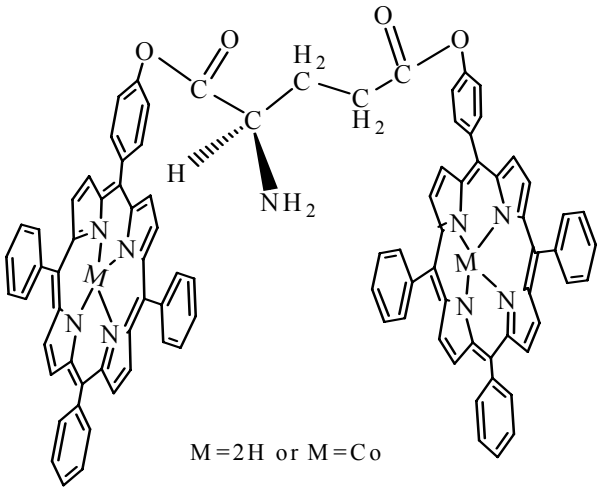

scheme 1 The structure of porphyrin dimer

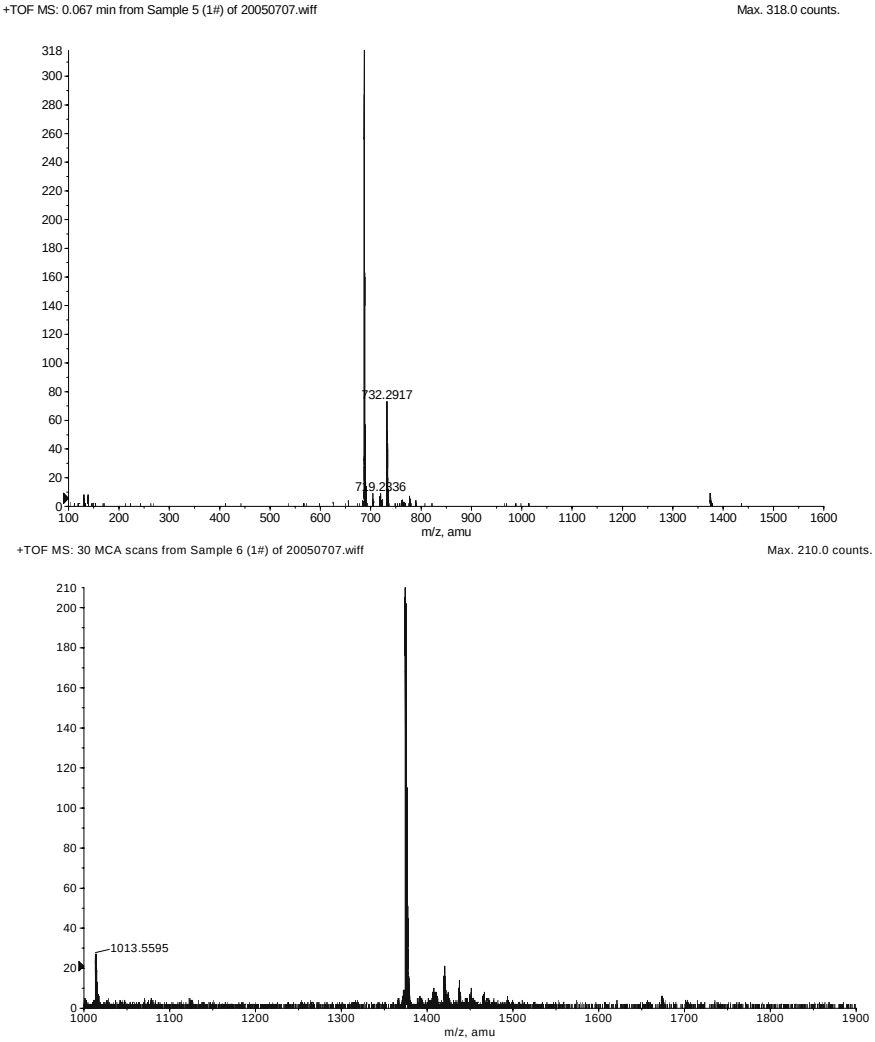

Fig.1 The mass spectra of the porphyrin dimer ligand

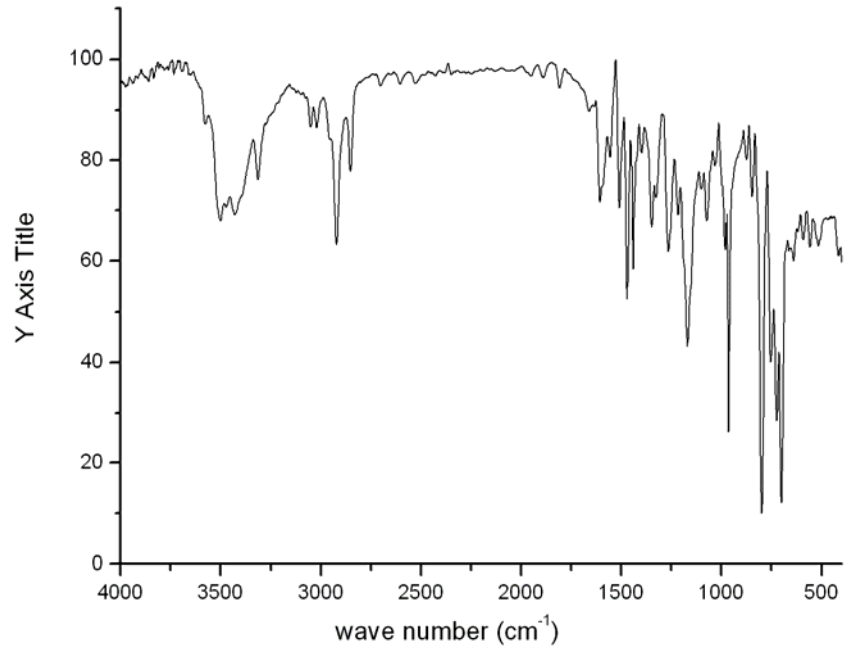

Fig.2 IR spectra of the porphyrin dimer ligand

Mass [FAB], m/z: calc. 1372.4, found 1374.4. [M+2]; Elemental anal (%) calcd for $C_{93}H_{65}N_9O_4$: calc. C： 81.38 H： 4.77； N: 9.18 found: C： 81.41； H： 4.76 N： 9.24; ^{1}H NMR (DMSO-d_6):δ:-2.93(d,4H), 0.85-0.83(t,2H),1.06(m,1H), 1.17-1.14(t,2H),6.50(s,2H,NH), 7.42-7.45 (m,4H,m-C_6H_4OH), 7.53-7.59(m,2H m-C_6H_4OH), 7.60-7.67(2H m-C_6H_4OH), 7.74-7.69 (t，2H ，m-C_6H_5),7.75-7.93 (m,18H,p,m，o-C_6H_5),7.95-8.12(d,2H m-C_6H_5),8.14 (s,6H m-C_6H_5), 8.24-8.37 (m,2H,p-C_6H_5),8.38-8.49 (d,2H pyrroleβ-H), 8.57-8.51(d,2H pyrroleβ-H),8.57 -8.91(t,12H pyrrole β -H); Uv-Vis [DMF, λ_{max}/nm ($\varepsilon\times10^5$)]: 420(8.5) 515(0.13) 552(0.08) 589(0.04) 649(0.05)

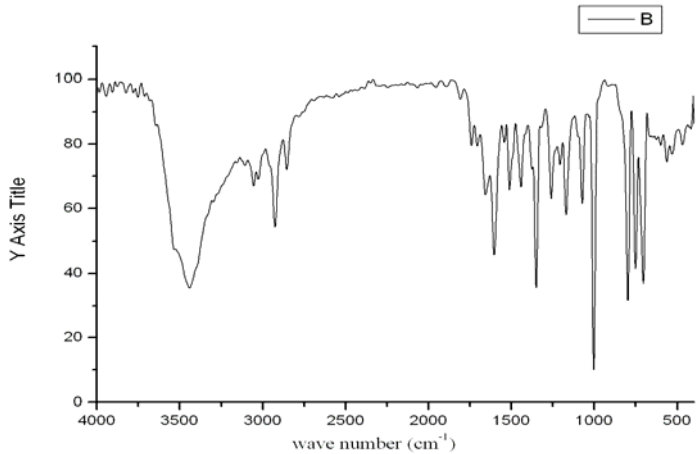

Fig.4 IR spectra of cobalt(Ⅱ) porphyrin dimer

Elemental anal(%) calcd for $C_{93}H_{61}N_9O_4Co_2$: C,75.15; H,4.14;N,8.48; found: C,74.69; H,4.18;N 8.44, ^{1}HNMR(300 MHz, DMSO), δ: 12.48 (br, 16H, pyrrole-H), 10.30 (s, 4H, m-C_6H_4O), 8.57(m,18H,m,p-C_6H_5),

8.19 (s, 4H,o-C_6H_4O), 7.95-7.88 (t,12H, o-C_6H_5),2.89 (s, 2H, CH_2), 2.73 (s, 2H, CH_2) 1.22-1.14 (d, 2H NH_2), 0.85 (br, s, 1H, CH);Uv-Vis [DMF, λ_{max}/nm ($\varepsilon\times10^5$)]: 409 (6.4), 536 (0.04)