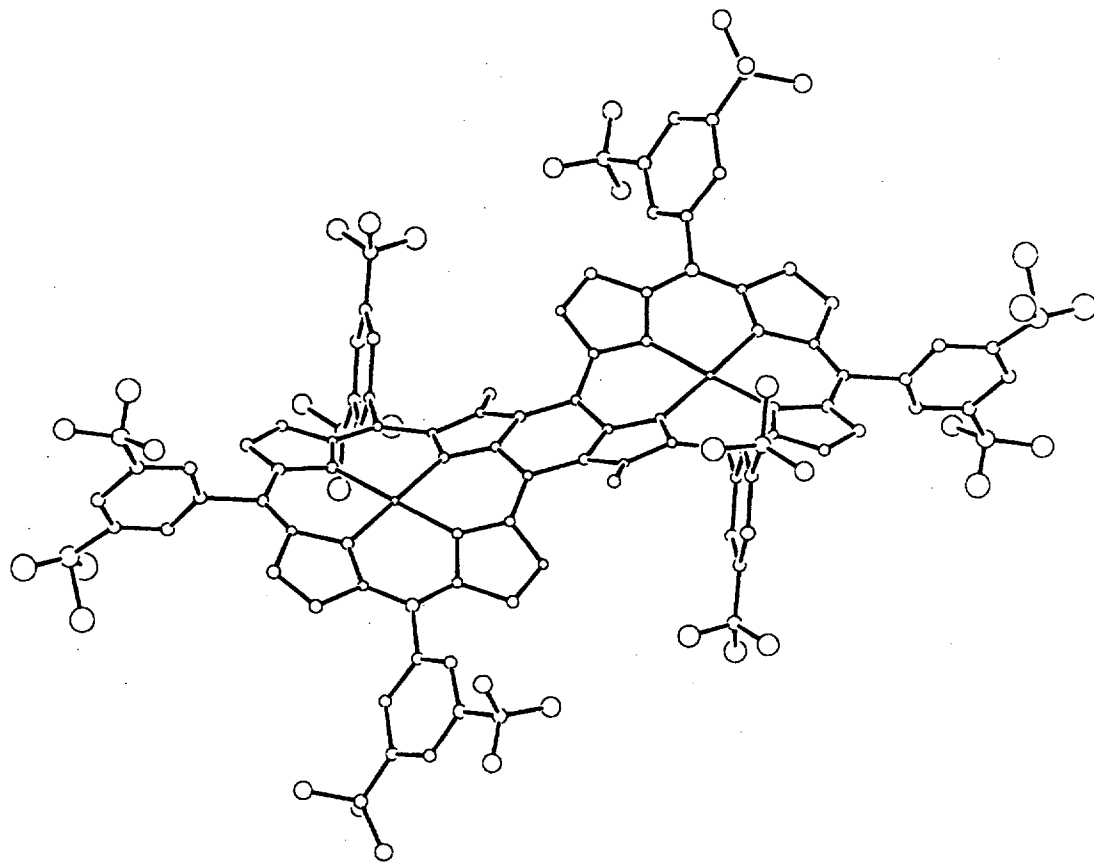


Supporting Information 1

Identification code	7f
Chemical formula	$C_{124}H_{138}N_8Cl_2Pd_2$
Formula weight	2024.21
Temperature	296K
Wavelength	0.71069 Å
Crystal system	Triclinic
Space group	P-1
Unit cell dimensions	a = 15.8386(6) Å α = 102.888(1)° b = 17.3092(1) Å β = 105.9590° c = 14.7097(2) Å γ = 69.4920° 3595.4(1) Å ³
Volume	1
Z	0.935 gcm ⁻³
Density (calculated)	3.27 cm ⁻¹
Absorption coefficient	1064
F(000)	0.20 × 0.20 × 0.10 mm ³
Crystal size	55.0°
$2\theta_{max}$	3435
Observed reflections	16069
Total reflections	100.0 %
Completeness to theta = 55.0°	Empirical
Absorption correction	Full-matrix least-squares on F ²
Refinement method	3435 / 0 / 451
Data / restraints / parameters	2.94
Goodness-of-fit on F ²	R1 = 0.144, wR2 = 0.194
Final R indices [$>3\sigma(I)$]	1.98 and -1.13 e/Å ³
Largest diff. Peak and hole	



Supporting Information 2

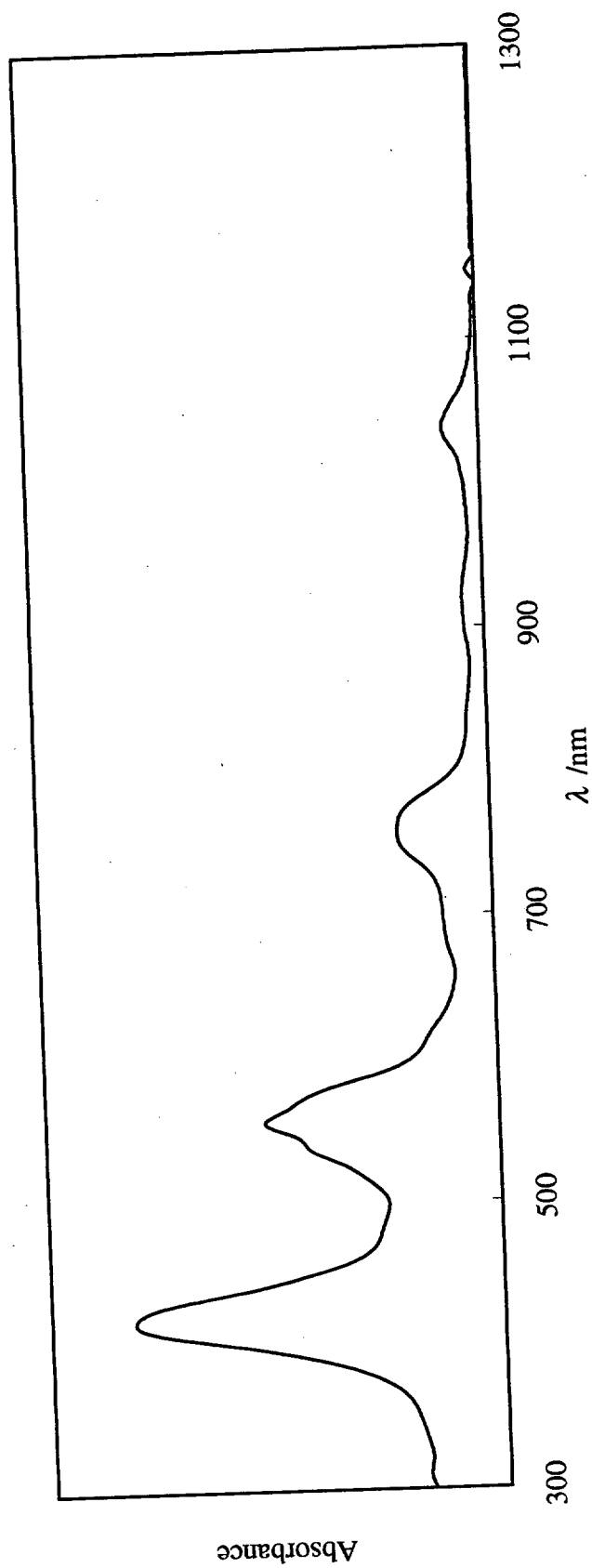
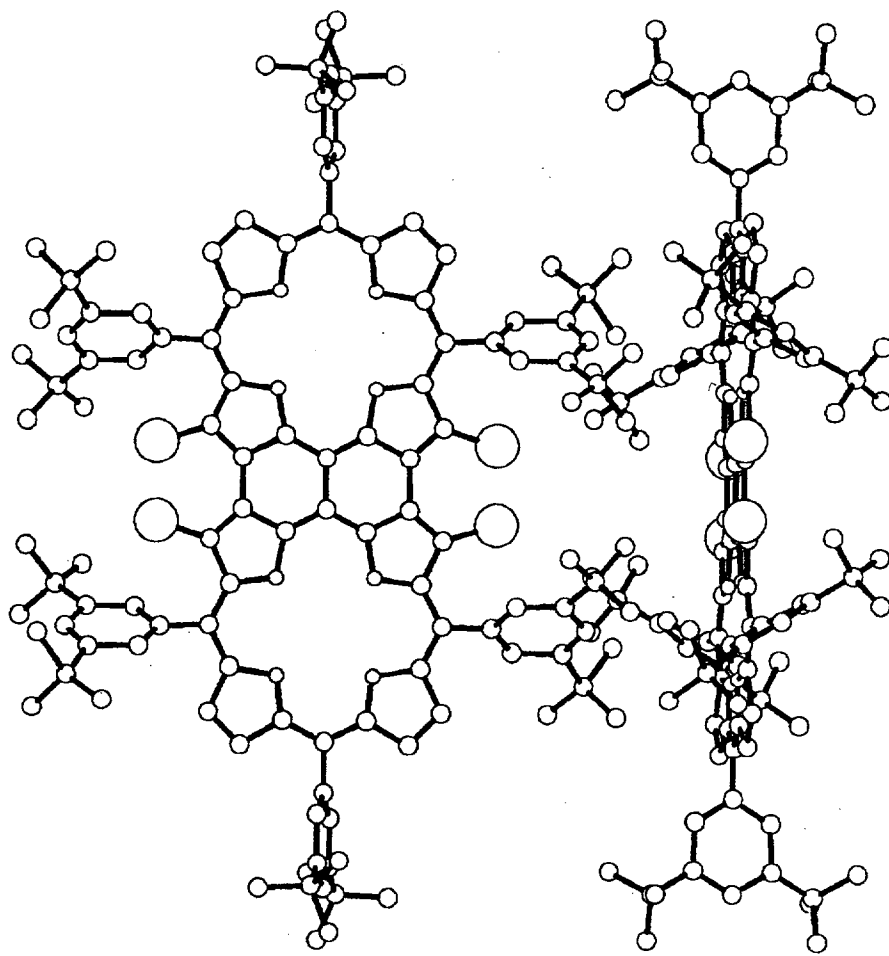


Figure 1. Absorption spectrum of Pd^{II}-tetraporphyrin 7i in CHCl₃.

Supporting Information 3

Identification code	8k
Chemical formula	$C_{124}H_{137}N_8ClO$
Formula weight	1790.95
Temperature	296K
Wavelength	0.71069 Å
Crystal system	orthorhombic
Space group	Cmca
Unit cell dimensions	a = 40.458(2) Å $\alpha = 90^\circ$ b = 16.748(1) Å $\beta = 90^\circ$ c = 18.003(1) Å $\gamma = 90^\circ$
Volume	12199(1) Å ³
Z	4
Density (calculated)	0.975 gcm ⁻³
Absorption coefficient	0.779 cm ⁻¹
F(000)	3848
Crystal size	0.40 × 0.30 × 0.10 mm ³
$2\theta_{max}$	55.0°
Observed reflections	7016
total reflections	31505
Completeness to theta = 55.0°	100.0 %
Absorption correction	Empirical
Refinement method	Full-matrix least-squares on F ²
Data / restraints / parameters	2390 / 0 / 320
Goodness-of-fit on F ²	1.27
Final R indices [$I > 2\sigma(I)$]	R1 = 0.149, wR2 = 0.161
Largest diff. Peak and hole	0.66 and -0.44 e/Å ³



Chlorine atom is disordered.

Supporting Information 4

Table 1. Rate constants and activation parameters for racemisation of *meso-meso* β - β doubly-linked Ni^{II}-diporphyrin **9a**. k_R , k_I , and $t^{1/2}$ represent racemisation rate constant, inversion rate constant, and half-life time, respectively.

temp (K)	k_R (sec ⁻¹)	k_I (sec ⁻¹)	$t^{1/2}$ (sec)
333	4.60×10^5	2.30×10^5	15084
343	1.47×10^4	7.35×10^5	4714
353	4.17×10^4	2.09×10^4	1660
358	6.56×10^4	3.28×10^4	1057
363	1.02×10^3	5.11×10^4	677

^aCorrelation coefficient $r^2=0.999$

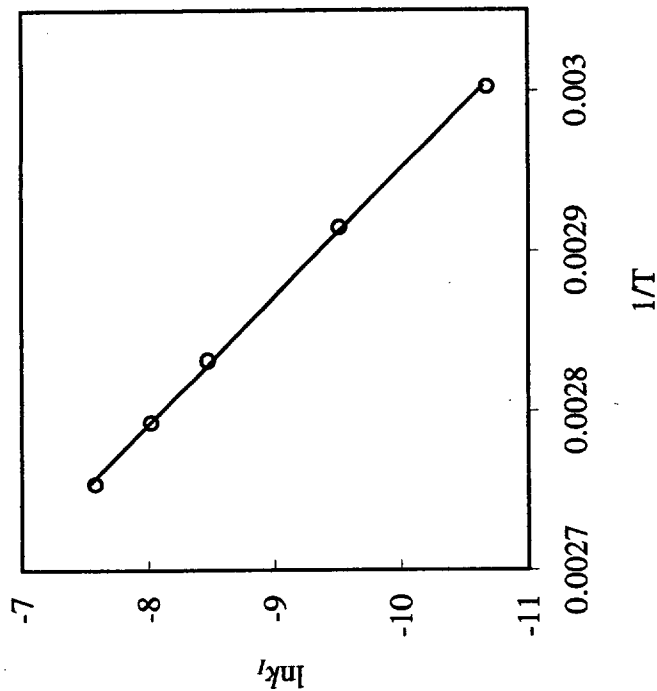


Figure 2. Plot of inversion rate constants $\ln k_i$ of **9a** vs $1/T$. The reactions were carried out in toluene at 60-90°C, and the rate constants were obtained from time course CD spectral change at 416 nm.

Supporting Information 5-1

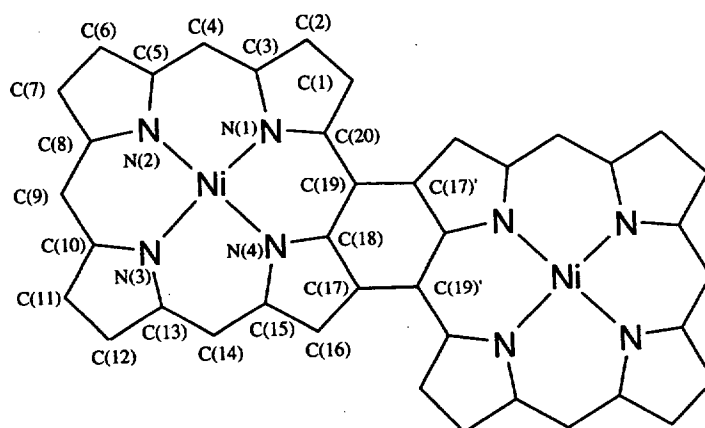


Table 2. Selected bond lengths for 7b

Atoms	Distance / Å	Atoms	Distance / Å
Ni-N(1)	1.944	C(6)-C(7)	1.354
Ni-N(2)	1.918	C(7)-C(8)	1.433
Ni-N(3)	1.920	C(8)-C(9)	1.390
Ni-N(4)	1.915	C(9)-C(10)	1.390
N(1)-C(3)	1.375	C(10)-C(11)	1.437
N(1)-C(20)	1.390	C(11)-C(12)	1.366
N(2)-C(5)	1.393	C(12)-C(13)	1.439
N(2)-C(8)	1.381	C(13)-C(14)	1.384
N(3)-C(10)	1.388	C(14)-C(15)	1.389
N(3)-C(13)	1.393	C(15)-C(16)	1.429
N(4)-C(15)	1.393	C(16)-C(17)	1.376
N(4)-C(18)	1.371	C(17)-C(18)	1.459
C(1)-C(2)	1.347	C(18)-C(19)	1.398
C(1)-C(20)	1.437	C(19)-C(20)	1.395
C(2)-C(3)	1.413	C(17)-C(19)'	1.447
C(3)-C(4)	1.393	C(19)-C(17)'	1.447
C(4)-C(5)	1.385		
C(5)-C(6)	1.427		

Supporting Information 5-2

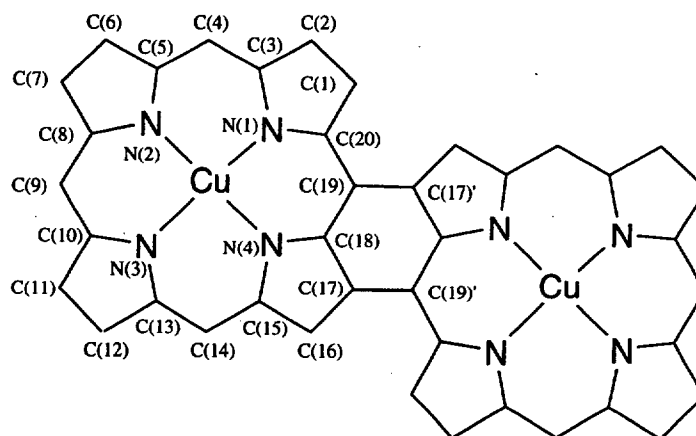
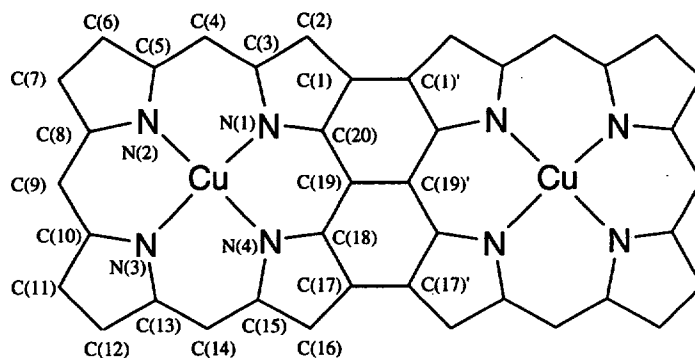


Table 3. Selected bond lengths for 7c

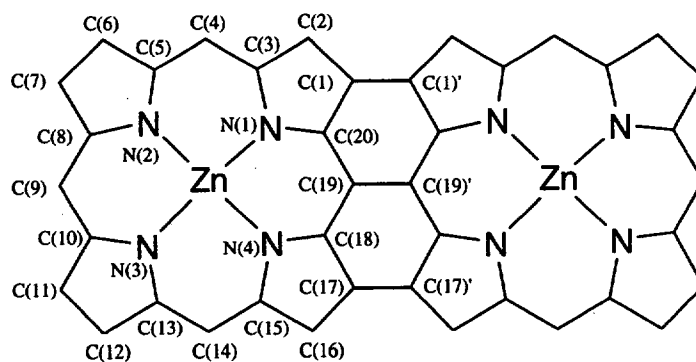
Atoms	Distance / Å	Atoms	Distance / Å
Cu-N(1)	1.998	C(6)-C(7)	1.322
Cu-N(2)	1.960	C(7)-C(8)	1.439
Cu-N(3)	1.991	C(8)-C(9)	1.394
Cu-N(4)	1.958	C(9)-C(10)	1.389
N(1)-C(3)	1.386	C(10)-C(11)	1.432
N(1)-C(20)	1.363	C(11)-C(12)	1.331
N(2)-C(5)	1.389	C(12)-C(13)	1.441
N(2)-C(8)	1.375	C(13)-C(14)	1.391
N(3)-C(10)	1.376	C(14)-C(15)	1.397
N(3)-C(13)	1.382	C(15)-C(16)	1.421
N(4)-C(15)	1.382	C(16)-C(17)	1.363
N(4)-C(18)	1.391	C(17)-C(18)	1.423
C(1)-C(2)	1.330	C(18)-C(19)	1.410
C(1)-C(20)	1.441	C(19)-C(20)	1.396
C(2)-C(3)	1.428	C(17)-C(19)'	1.461
C(3)-C(4)	1.395	C(19)-C(17)'	1.461
C(4)-C(5)	1.403		
C(5)-C(6)	1.441		

Supporting Information 5-3

Table 4. Selected bond lengths for **8g**

Atoms	Distance / Å	Atoms	Distance / Å
Cu-N(1)	1.974	C(6)-C(7)	1.287
Cu-N(2)	1.991	C(7)-C(8)	1.475
Cu-N(3)	2.014	C(8)-C(9)	1.408
Cu-N(4)	1.986	C(9)-C(10)	1.398
N(1)-C(3)	1.398	C(10)-C(11)	1.420
N(1)-C(20)	1.368	C(11)-C(12)	1.336
N(2)-C(5)	1.379	C(12)-C(13)	1.420
N(2)-C(8)	1.309	C(13)-C(14)	1.405
N(3)-C(10)	1.338	C(14)-C(15)	1.396
N(3)-C(13)	1.386	C(15)-C(16)	1.418
N(4)-C(15)	1.422	C(16)-C(17)	1.390
N(4)-C(18)	1.387	C(17)-C(18)	1.436
C(1)-C(2)	1.340	C(18)-C(19)	1.394
C(1)-C(20)	1.467	C(19)-C(20)	1.420
C(2)-C(3)	1.463	C(1)-C(1')	1.410
C(3)-C(4)	1.364	C(17)-C(17)'	1.410
C(4)-C(5)	1.388	C(19)-C(19)'	1.439
C(5)-C(6)	1.469		

Supporting Information 5-4

Table 5. Selected bond lengths for **8j**

Atoms	Distance / Å	Atoms	Distance / Å
Zn-N(1)	2.067	C(6)-C(7)	1.381
Zn-N(2)	2.055	C(7)-C(8)	1.438
Zn-N(3)	2.086	C(8)-C(9)	1.416
Zn-N(4)	2.081	C(9)-C(10)	1.411
N(1)-C(3)	1.402	C(10)-C(11)	1.452
N(1)-C(20)	1.353	C(11)-C(12)	1.369
N(2)-C(5)	1.391	C(12)-C(13)	1.446
N(2)-C(8)	1.392	C(13)-C(14)	1.423
N(3)-C(10)	1.398	C(14)-C(15)	1.410
N(3)-C(13)	1.383	C(15)-C(16)	1.433
N(4)-C(15)	1.376	C(16)-C(17)	1.374
N(4)-C(18)	1.365	C(17)-C(18)	1.443
C(1)-C(2)	1.364	C(18)-C(19)	1.412
C(1)-C(20)	1.485	C(19)-C(20)	1.431
C(2)-C(3)	1.436	C(1)-C(1)'	1.431
C(3)-C(4)	1.388	C(17)-C(17)'	1.431
C(4)-C(5)	1.431	C(19)-C(19)'	1.505
C(5)-C(6)	1.470		

Supporting Information 5-5

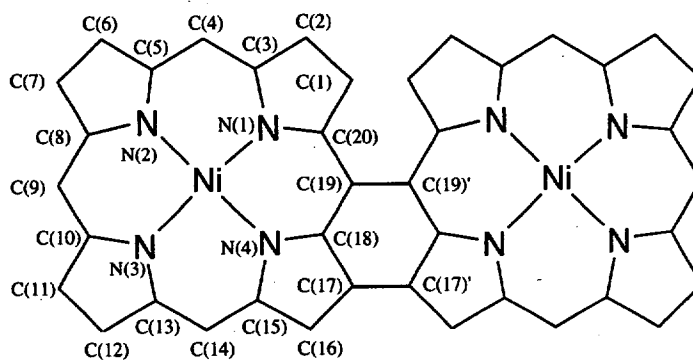


Table 6. Selected bond lengths for 9a

Atoms	Distance / Å	Atoms	Distance / Å
Ni-N(1)	1.904	C(6)-C(7)	1.359
Ni-N(2)	1.872	C(7)-C(8)	1.457
Ni-N(3)	1.916	C(8)-C(9)	1.373
Ni-N(4)	1.893	C(9)-C(10)	1.414
N(1)-C(3)	1.375	C(10)-C(11)	1.412
N(1)-C(20)	1.382	C(11)-C(12)	1.295
N(2)-C(5)	1.406	C(12)-C(13)	1.431
N(2)-C(8)	1.399	C(13)-C(14)	1.393
N(3)-C(10)	1.372	C(14)-C(15)	1.393
N(3)-C(13)	1.357	C(15)-C(16)	1.447
N(4)-C(15)	1.390	C(16)-C(17)	1.379
N(4)-C(18)	1.372	C(17)-C(18)	1.430
C(1)-C(2)	1.330	C(18)-C(19)	1.388
C(1)-C(20)	1.433	C(19)-C(20)	1.411
C(2)-C(3)	1.427	C(17)-C(17)'	1.437
C(3)-C(4)	1.404	C(19)-C(19)'	1.490
C(4)-C(5)	1.434		
C(5)-C(6)	1.416		