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Coordination chemistry of manganese and iron with N,O-donor ligands: oxidation catalysis and magnetochemistry of clusters

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List of commonly used Symbols and Abbreviations in This Thesis

ε	molar extinction coefficient (M^{-1} cm^{-1})
λ	wavelength
ν	scan rate
μ_{eff}	effective magnetic moment
μ_B	Bohr magneton
a_{Mn}	hyperfine splitting parameter
Δ	height of the activation energy barrier
τ	the relaxation time of the magnetization
AC	Alternating current
DC	Direct current
BLM	bleomycin
bpy	2,2'-bipyridine
bpmen	*N*,*N*'-bis(2-pyridylmethyl)-*N*,*N*'-dimethyl-1,2-diaminoethane
H_2bppa	bis(6-pivalamide-2-pyridylmethyl)-2-pyridylmethyl)amine
m-CPBA	*m*-chloroperbenzoic acid
CV	cyclic voltammetry
ΔE	peak-to-peak separation. ($\lvert E_{pa} - E_{pc}\rvert$)
$E_{½}$	half wave potential. ($\frac{E_{pa} + E_{pc}}{2}$)
E_{pa}	anodic peak potential
E_{pc}	cathodic peak potential
ee	percentage enantiomeric excess defined as $100 \times \lvert(F_{(+)} - F_{(-)})\rvert$, where F is weight or mole fraction, where $(F_{(+)} + F_{(-)}) = 1$.
EPR	electron paramagnetic resonance
ESI-MS	electrospray mass spectrometry
g	spectroscopic splitting factor. (Lande' factor)
GC	gas chromatography
GC-MS	gas chromatography-mass spectrometry
Hacac	2,4-pentanedione
bpia	bis(pyridylmethyl)(N-methylimidazol-2-ylmethyl)amine
benzimpn	*N*,*N*,*N'*,*N'*-tetrakis(2-methylenebenzamidazolyl)-1,3-diaminopropan-2-ol
H_2Cl_8tdcpp	5,10,15,20-tetrakis(2,6-dichlorophenyl)-*β*-octachloroporphyrin
H_2dfft	Desferriferrithiocin
HEtsalim	Ethyl salicylimidate
HMesalim	Methyl salicylimidate
Hphox	2-(2'-hydroxyphenyl)-oxazoline
HphoxCOOMe	Methyl 2-(2'-hydroxyphenyl)-oxazoline-4-carboxylate
HphoxCOOH	2-(2'-hydroxyphenyl)-oxazoline-4-carboxylic acid
Hphox*i*Pr	2-(2'-hydroxyphenyl)- 4-isopropyloxazoline

H-3',5'-dClphox	2-(3',5'-dichloro-2'-hydroxyphenyl)-oxazoline
H-3'-HOphox	2-(2',3'-dihydroxyphenyl)-oxazoline
H-3'-Mephox	2-(2'-hydroxy-3'-methylphenyl)-oxazoline
H-5'-Mephox	2-(2'-hydroxy-5'-methylphenyl)-oxazoline
H-5'-MeOphox	2-(2'-hydroxy-5'-methoxyphenyl)-oxazoline
H-5'-NO_2phox	2-(2'-hydroxy-5'-nitrophenyl)-oxazoline
H_2salen	*N*,*N*'-bis(salicylidene)-1,2-diaminoethane (and derived (chiral) ligands)
H_2salpn	*N*,*N'*-bis(salicylidene)-1,3-diaminopropane
H_2(2-OH)-salpn	*N*,*N'*-bis(salicylidene)-(2-hydroxy)-1,3-diaminopropane
H_2phpz	3(5)-methyl-5(3)-(2-hydroxyphenyl)pyrazole
i_{pa}	anodic peak current
i_{pc}	cathodic peak current
IR	infrared
I	Intensity of peaks
LMCT	ligand-to-metal charge transfer
m/z	mass to charge ratio
Me_3tacn	1,4,7-trimethyl-1,4,7-triazacyclononane (and derived ligands)
mcp	*N*,*N*'-dimethyl-*N*,*N*'-bis(2-pyridylmethyl)-1*R*,2*R*-diaminocyclohexane
MMO	methane monooxygenase
MS	mass spectrometry
NIR	near infrared
N-MeIm	1-methylimidazole
NMR	nuclear magnetic resonance
N_4py	N,N-bis(2-pyridylmethyl)-N-bis(2-pyridyl)methylamine
OEC	oxygen evolving centre
P-450	the enzyme P-450 (formerly called Cytochrome P-450
PSII	photosystem II
SMM	Single Molecule Magnet
S_T	Spin Ground state
SOD	Superoxide dismutase
TBHP	*t*-butyl hydroperoxide
T_B	Blocking temperature
tpa	tris(2-pyridylmethyl)amine
tpaa	tris-[*N*-(2-pyridylmethyl)-2-aminoethyl]amine
tptn	*N*,*N*,*N*',*N*'-tetrakis(2-pyridylmethyl)-1,3-diaminopropane
TON	Turnover number of the product (in mole product per mole catalyst)
UV	ultraviolet
Vis	visible