

LIST OF ABBREVIATIONS

acac ₂ enH ₂	N,N'-ethylenebis(acetylacetimine)
acacH	pentane-2,4-dione
adipH ₂	adipic acid
alaH	alanine
Am	amyl
5 ¹ -AMP	5 ¹ -adenosine monophosphate
amq	8-aminoquinoline
[14]aneS ₄	1,4,8,11-tetrathiacyclotetradecane
(9)anN ₃	1,4,7-triazacyclononane
APW	augmented plane wave
argH	arginine
asp	aspartate
biimH	2,2'-biimidazole
bipy	2,2'-bipyridine
4,4'-bipy	4,4'-bipyridine
bipyam	di(2-pyridyl)amine
biquin	2,2'-biquinoline
bot	benzoxazole-2-thione
b.p.	boiling point
bpdo	2,2'-bipyridine N,N'-dioxide
bpz	2,2'-bipyrazine
BPz ₄	tetrakis(pyrazol-1-yl)borate
bq	1,2-benzoquinone
bqd	benzoquinone dioximate

bta	2,2'-bi-2-thiazoline
Bu	butyl
^t Bu	<i>t</i> -butyl (CMe ₃)
Bz	benzyl
bzacH	1-phenylbutane-1,3-dione (benzoylacetone)
bzd	benzidine
bzo[15]eneS ₄	3,6,10,13-tetrathiabicyclo[13.4.0]nonadec-1,16,18-triene
catH	catechol (1,2-dihydroxybenzene)
CD	circular dichroism
CF	crystal field
1,3-chxn	cis-1,3-cyclohexanediamine
citH ₃	citric acid
3-CNacacH	3-cyanopentane-2,4-dione
cod	cycloocta-1,5-diene
cotr	cyclooctatriene
cp	η^5 -cyclopentadienyl
cpta	trans-1,2-diaminocyclopentane
CT	charge transfer
CV	cyclic voltammetry
cych	cyclohexyl
cyclam	1,4,8,11-tetraazacyclotetradecane
cyclen	1,4,7,10-tetraazacyclododecane
cyclops	difluoro{3,3'-(trimethylenedinitrilo)bis(2-butanone-oximate))}borate
cysH	cysteine
dap	2,6-diethanoylpyridine
dbzmaH	1,3-diphenylpropane-1,3-dione (dibenzoylmethane)

dea	diethylacetamide
def	1,1'-diethanoylferrocene
dehph	di-(2-ethylhexyl)phosphonic acid
dhaqH ₂	1,4-dihydroxyanthraquinone
diars	1,2-phenylenabis(dimethylarsine)
dien	1,4,7-triazasheptane (diethylenetriamine; bis(2-aminoethyl)amine)
dik	β -diketonate
dim	2,3-Me ₂ -[14]-1,3-diene-1,4,8,11-N ₄ {Me ₂ [14]dieneN ₄ }
(+)-diop	(+)-2,3-O-diisopropylidene-2,3-dihydroxy-1,4-bis-(diphenylphosphino)butane
diox	1,4-dioxan
dipicH ₂	pyridine-2,6-dicarboxylic acid
dma	dimethylethanamide
dmbydo	3,3'-dimethyl-2,2'-bipyridine N,N'-dioxide
dme	1,2-dimethoxyethane
dmn	N,N'-dimethyl-1,2-diaminoethane
dmf	dimethylmethanamide
dmg	dimethylglyoximate
dmgH ₂	dimethylglyoxime
dnhH	5,5-dimethylhexane-2,4-dione
dmhph	2,4-dimethyl-6-hydroxypyrimidine
dmpo	1,2-bis(dimethylphosphino)ethane
dmpl	3,4-dimethyl-1-phenylphosphole
dmplH	3,5-dimethylpyrazole
dmso	dimethylsulphoxide
dnu	N,N'-dimethylurea
dpa	1,2-bis(diphenylarsino)ethane
dpa	bis(diphenylarsino)methane

dpaq	8-(diphenylarsino)quinoline
dpen	<i>N,N'</i> -diphenyl-1,2-diaminoethane
dpg	diphenylglyoximate
dpmH	2,2,6,6-tetramethylheptane-3,5-dione (dipivaloylmethane)
dppa	2-(diphenylphosphino)anisole
dppba	2-(diphenylphosphino)benzaldehyde
dppe	1,2-bis(diphenylphosphino)ethane
dppee	<i>cis</i> -1,2-bis(diphenylphosphino)ethene
dpphe	1,6-bis(diphenylphosphino)hex-3-ene
dppm	bis(diphenylphosphino)methane
dppp	1,3-bis(diphenylphosphino)propane
dppq	8-(diphenylphosphino)quinoline
dpt	bis(3-aminopropyl)amine
DSC	differential scanning calorimetry
DTA	differential thermal analysis
1,2-dta	1,2-dithiane
dtbiH	2,4-dithiobiuret
dtbH	dithiobenzoic acid
dte	dithiocarbamate
DTGA	differential thermogravimetric analysis
2,5-dth	2,5-dithiohexane
dtomH ₂	1,2-dithiooxalic acid
dttf	dibenzotetrathiafulvalene
DV	discrete variational
DVM	discrete variational method
ECL	electrochemiluminescence
eddaH ₂	<i>N,N'</i> -ethylenediaminediacetic acid
edmaH	<i>N</i> -ethylenediamineacetic acid

edptaH ₄	ethylenediphosphinetetraacetic acid
edtaH ₄	ethylenediaminetetraacetic acid
edtp	<i>N,N,N',N'</i> -tetrakis(2'-benzimidazolylmethyl)-1,2-diaminoethane
EHMO	extended Hückel molecular orbital
EHT	extended Hückel theory
en	1,2-diaminoethane
ENDOR	electron-nuclear double resonance
EPR	electron paramagnetic resonance
epyden	2,6-bis(5-(1,4-diazahexyl))pyridine
Et	ethyl
etdp	2-ethyltetraphenoxodiphosphazine
EXAFS	extended X-ray absorption fine structure
fbts	1-(α)-furyl-4-benzylamidothiosemicarbazone
FT	Fourier transform
glyH	glycine
Hb	haemoglobin
HBPz ₃	hydrotris(pyrazol-1-yl)borate
hedpH ₄	1-hydroxyethane-1,2-diphosphonic acid
hedtaH ₃	<i>N</i> -(hydroxyethyl)ethylenediaminetriacetic acid
hfacach	1,1,1,5,5,5-hexafluoropentane-2,4-dione
hisH	histidine
hmpa	tris(dimethylamino)phosphine oxide (hexamethylphosphoramide)
hmta	hexamethylenetetraamine
HOMO	highest occupied molecular orbital

HO-8-quin	8-hydroxyquinoline
HPLC	high pressure liquid chromatography
imdaH	iminodiethanoic acid
imdien	1,9-bis(4-imidazolyl)-2,5,8-triazanonane
imdgt	1,11-bis(4-imidazolyl)-2,6,10-triazaundecane
imidH	imidazole
IR	infrared
isonic	isonicotinamide
IT	intervalence transition
LMCT	ligand-to-metal charge transfer
LUMO	lowest unoccupied molecular orbital
lysh	lysine
malH ₂	malonic acid
MbH ₂	myoglobin
mbtH	mercaptobenzothiazole
Me	methyl
3-MeacacH	3-methylpentane-2,4-dione
MeCP	methylcyclopentadienyl
1-Mecyt	1-methylcytosine
medien	4-methyl-1,4,7-triazaheptane
Meen	N-methyl-1,2-diaminoethane
Me ₂ en	N,N-dimethyl-1,2-diaminoethane
1-Meimid	1-methylimidazole
2,9-Me ₂ phen	2,9-dimethyl-1,10-phenanthroline
2-Mepy	2-methylpyridine
3-Mepy	3-methylpyridine

4-Mepy	4-methylpyridine
nhph	6-methyl-2-hydroxypyridine
MLCT	metal-to-ligand charge transfer
mnt	maleonitrile dithiolate
MO	molecular orbital
m.p.	melting point
MPiX ₂	meso-porphyrin-IX
MPiX ₂ NEt ₂	meso-porphyrin-IX-dimethyl ester
mpp1	3-methyl-1-phenylphosphole
[MV] ²⁺	1,1'-dimethyl-4,4'-bipyridinium dication (methyl viologen or Paraquat)
[N(2amet)pipzH ₃] ³⁺	N-(2-azoniummethyl)piperazinium trication
nbd	[2.2.1]-bicyclohepta-1,3-diene
nic	nicotinamide
nmp	N-methyl-2-pyrrolidine
NMR	nuclear magnetic resonance
N,N-Et ₂ en	N,N-diethyl-1,2-diaminoethane
5-NO ₂ -phen	5-nitro-1,10-phenanthroline
np	2-naphthyl
NQR	nuclear quadrupole resonance
ntaH ₃	nitriloethanoic acid
ntbt	tris(2-benzothiazolylmethyl)amine
OAc	ethanoate
O-en-N-tnH ₄	3,4:9,10-dibenzo-1,12-diaza-5,8-dioxacyclopentadecane
OEPH ₂	octamethylporphyrin
ompha	octamethylpyrophosphoramide
8-O-quin	8-hydroxyquinoline anion

ORD	optical rotary dispersion
ornH	ornithine
OTTE	optically transparent thin layer electrode
ox	oxalate
PcH ₂	phthalocyanine
pdth ₂	2-pyrrolidone-1,3-bis(carbodithioic acid)
penH	penicillamine
PES	photoelectron spectroscopy
Ph	phenyl
L-phe	L-phenylalanine
phen	1,10-phenanthroline
4,7-Ph ₂ -phen	4,7-diphenyl-1,10-phenanthroline
pip	piperidine
pmbzpH	1-phenyl-3-methyl-4-benzoylpyrazole-5-one
pdtt	1,1,4,7,7-pentamethyl-1,4,7-triazaheptane (pentamethyl- diethylenetriamine)
pmtfpH	1-phenyl-3-methyl-4-etrifluoroethanoylpyrazole-5-one
1,2-pn	1,2-diaminopropane
1,3-pn	1,3-diaminopropane
PPIXDBE	protoporphyrin-IX-dibutyl ester
PPIXDME	protoporphyrin-IX-dimethyl ester
ppl	1-phenylphosphole
PPP	Pariser-Parr-Pople
P(py) ₃	tris(2-pyridyl)phosphine
pq	2-(2-pyridyl)quinoline
Pr	propyl
^t Pr	iso-propyl (CMe ₂ H)
proH	proline

ptaH ₃	phosphinetriacetic acid
purH	purine
PVP	poly(4-vinylpyridine)
py	pyridine
py-2,6-(COOH) ₂	pyridine-2,6-dicarboxylic acid
pydien	1,9-bis(2-pyridyl)-2,5,8-triazanonane
pydpt	1,11-bis(2-pyridyl)-2,6,10-triazaundecane
pyNO	pyridine <i>N</i> -oxide
py-2-OH	2-hydroxypyridine
pysalH	<i>N</i> -(2-pyridyl)salicylaldehyde
py-3-SO ₃ H	pyridine-3-sulphonic acid
pz	pyrazine
pzH	pyrazole
φ	quantum yield
quin	quinoline
quin-8-OH	8-hydroxyquinoline
r	bond length
RDS	Raman difference spectroscopy
salH ₂	salicylic acid
sal ₂ enH ₂	<i>N,N'</i> -ethylenabis(salicylideneimine)
sal ₂ phenH ₂	<i>N,N'</i> - <i>o</i> -phenylenabis(salicylideneimine)
sal ₂ propH ₂	<i>N,N'</i> -trimethylenabis(salicylideneimine)
sbtH	1-salicyl-4-benzylamidothiosemicarbazone
SCE	saturated calomel electrode
SCP	self-consistent field
SCMP	self-consistent Madelung potential

SDS	sodium dodecyl sulphate
serH	serine
SERS	surface enhanced Raman spectroscopy
SHE	standard hydrogen electrode
sq	1,2-benzosemiquinone
squH ₂	squaric acid
SW	scattered wave
T _C	Curie temperature
T _N	Néel temperature
taaH ₂	1,8-dihydrodibenzo[b,i][1,4,8,11]tetraazaannulene
tacd	1,4,7-triazacyclodecane
tach	cis,cis-1,3,5-triaminocyclohexane
tame	1,1,1-tris(aminomethyl)ethane
tarH ₂	4-(2-thiazolyloxy)resorcinol
tertH ₂	tartaric acid
tbcyclen	1,4,7,10-Bz ₄ -(12)ane-1,4,7,10-N ₄ TBPH ₂ tetrabenzoporphyrin
tcne	tetracyanoethene
TCNQ	7,7,8,8-tetracyanoquinodimethane (2,5-cyclohexadiene-Δα,4α'-dimalonitrile)
tedtaH ₄	thiobis(ethylenenitrilo)tetraacetic acid
teen	N,N,N',N'-tetraethyl-1,2-diaminoethane
teoa	triethanolamine
terpy	2,2':6',2"-terpyridine
2,3,2-tet	1,4,8,11-tetraazaundecane
3,2,3-tet	1,5,8,12-tetraazadodecane
3,3,3-tet	1,5,9,13-tetraazatridecane
tetren	1,11-diamino-3,6,9-triazaundecane
tfa	trifluoroethanoate

tfacacH	1,1,1-trifluoropentane-2,4-dione
TGA	thermogravimetric analysis
thf	tetrahydrofuran
thrH	threonine
tht	tetrahydrothiophene
thtfacH	2-thenoyltrifluoropropanone
tim	2,3,9,10-Me ₄ -[14]-1,3,8,10-tetraene-1,4,8,11-N ₄ (Me ₄ [14]tetraeneN ₄)
tipp	tri(isopropyl)phosphate
TIPPPH ₂	meso-tetra(isopropyl-4-phenyl)porphyrin
TLC	thin layer chromatography
tmc	tetramethylcyclan
tmen	N,N,N',N'-tetramethyl-1,2-diaminoethane
tme ₃	thiomalic acid
tmp	trimethylphosphate
tsao	tetramethylenesulphoxide
tmtu	tetramethylthiourea
tmu	tetramethylurea
TPPH ₂	meso-tetraphenylporphyrin
TPPSH ₆	meso-tetrakis(phenyl-4-sulphonic acid)porphyrin
tpt	2,4,6-tri(2-pyridyl)-1,3,5-triazine
tren	2,2',2"-triaminotriethylamine
trien	1,8-diamino-3,6-diazaoctane (triethylenetetramine)
triphos	1,1,1-tris(diphenylphosphinomethyl)ethane
ttp	tri-4-tolylphosphate
TPTH ₂	meso-tetra(4-tolyl)porphyrin
tu	thiourea
UV	ultraviolet

UVPES	ultraviolet photoelectron spectroscopy
UV-VIS	ultraviolet-visible
UV-VIS-NIR	ultraviolet-visible-near infrared
ΔV	activation volume
VT	variable temperature
xan	xanthate, $[S_2C(OR)]^-$
XPES	X-ray photoelectron spectroscopy
ZFS	zero field splitting