

LIST OF ABBREVIATIONS

acac ₂ enH ₂	<i>N,N'</i> -ethylenebis(acetylacetimine)
acacH	pentane-2,4-dione
adipH ₂	adipic acid
alaH	alanine
Am	amyl
5 ¹ -AMP	5 ¹ -adenosine monophosphate
ampy	2-(aminomethyl)pyridine
amq	8-aminoquinoline
[15]anaN ₄	1,4,8,12-tetraazacyclopentadecane
[16]anaN ₄	1,5,9,13-tetraazacyclohexadecane
[13]anaS ₄	1,4,7,10-tetrathiacyclotridecane
[14]anaS ₄	1,4,8,11-tetrathiacyclotetradecane
(9)anN ₃	1,4,7-triazacyclononane
APW	augmented plane wave
argH	arginine
asp	aspartate
au	<i>N'</i> -amidinoisourea
bchd	bicyclo[2.2.1]hepta-2,5-diene; norbornadiene
bg	biguanidine
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 <i>N,N'</i> -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-cinn	<i>cis</i> -1,3-cyclohexanediamine
citH ₃	citric acid
5-Clphen	5-chloro-1,10-phenanthroline
3-CNacacH	3-cyanopentane-2,4-dione
cod	cycloocta-1,5-diene
cootr	cyclooctatriene
cp	η ⁵ -cyclopentadienyl
cpta	<i>trans</i> -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-butanoneoximate)}borate
cysH	cysteine
dadn	1,9-diamino-3,7-diazanonane
dadd	1,10-diamino-4,7-diazadecane
dap	2,6-diethanoylpyridine
dbenzH	1,3-diphenylpropane-1,3-dione (dibenzoyl- methane)
dcpsH ₂	2,5-pyrazine dicarboxylic acid
den	diethylacetamide
debq	diethylbiguanidine
def	1,1'-diethanoylferrocene
dehpH	di-(2-ethylhexyl)phosphonic acid
dhaqH ₂	1,4-dihydroxyanthraquinone
diars	1,2-phenylenebis(dimethylarsine)
dien	1,4,7-triazaheptane (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

dmby	dimethylbiguanidine
dmbydo	3,3'-dimethyl-2,2'-bipyridine <i>N,N'</i> -dioxide
dme	1,2-dimethoxyethane
dmn	<i>N,N'</i> -dimethyl-1,2-diaminoethane
dms	dimethylmethanamide
dmq	dimethylglyoximate
dmqH ₂	dimethylglyoxime
dmsh	5,5-dimethylhexane-2,4-dione
dmshp	2,4-dimethyl-6-hydroxypyrimidine
dmp	1,2-bis(dimethylphosphino)ethane
dmp1	3,4-dimethyl-1-phenylphosphole
dmpzH	3,5-dimethylpyrazole
dmso	dimethylsulphoxide
dmu	<i>N,N'</i> -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
dpm	2,2,6,6-tetramethylheptane-3,5-dione (dipivaloyl)ethane)
dpp	2-(diphenylphosphino)anisole
dppa	2-(diphenylphosphino)benzaldehyde
dpp	1,2-bis(diphenylphosphino)ethane
dpps	<i>cis</i> -1,2-bis(diphenylphosphino)ethene
dpph	1,6-bis(diphenylphosphino)hex-3-ene
dpp	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
dtc	dithiocarbamate
DTGA	differential thermogravimetric analysis
2,5-dth	2,5-dithiohexane
dtcoxH ₂	1,2-dithiooxalic acid
dttf	dibenzotetrathiafulvalene
DV	discrete variational
DVM	discrete variational method
abg	ethylbiguanidine
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
EELS	electron energy loss spectroscopy
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
HBZ ₃	hydrotris(pyrazol-1-yl)borate
hedpH ₄	1-hydroxyethane-1,2-diphosphonic acid
hedtaH ₃	N-(hydroxyethyl)ethylenediaminetriacetic acid
hfacacH	1,1,1,5,5,5-hexafluoropentane-2,4-dione
HFS	Hartree-Fock-Slater
hisH	histidine
hapa	tris(diethylamino)phosphine oxide (hexamethylphosphoramide)
hmta	hexamethylenetetramine
HOMO	highest occupied molecular orbital
HO-8-quin	8-hydroxyquinoline
HPLC	high pressure liquid chromatography
hyp	hypoxanthine; purine-6-one
imdaH	iminodiethanoic acid
indien	1,9-bis(4-imidazolyl)-2,5,8-triazanonane
indpt	1,11-bis(4-imidazolyl)-2,6,10-triazaundecane
imidH	imidazole
IR	infrared
ishq	7-iodo-8-hydroxyquinoline-4-sulphonic acid
isonic	isonicotinamide

IT	intervalence transition
LMCT	ligand-to-metal charge transfer
LUMO	lowest unoccupied molecular orbital
lysH	lysine
malH ₂	malonic acid
mbg	methylbiguanidine
MeH ₂	myoglobin
mbtH	mercaptobenzothiazole
Me	methyl
3-MeacacH	3-methylpentane-2,4-dione
Me ₆ [14]aneN ₄	5,5,7,12,12,14-hexamethyl-1,4,8,11-tetraaza- -cyclotetradecane
4,4'-Me ₂ bipy	4,4'-dimethyl-2,2'-bipyridine
5,5'-Me ₂ bipy	5,5'-dimethyl-2,2'-bipyridine
6,6'-Me ₂ bipy	6,6'-dimethyl-2,2'-bipyridine
MeCP	methylcyclopentadienyl
1-Mecyt	1-methylcytosine
medien	4-methyl-1,4,7-triazasheptane
Meen	N-methyl-1,2-diaminoethane
Me ₂ en	N,N-dimethyl-1,2-diaminoethane
7-Mehyp	7-methylhypoxanthine
Meialo	10-methylisalloxazine
Me ₂ ialo	3,10-dimethylisalloxazine
1-Meimid	1-methylimidazole
2,9-Me ₂ phen	2,9-dimethyl-1,10-phenanthroline

4,7-Me ₂ -phen	4,7-dimethyl-1,10-phenanthroline
3,4,7,8-Me ₄ -phen	3,4,7,8-tetramethyl-1,10-phenanthroline
2-Mepy	2-methylpyridine
3-Mepy	3-methylpyridine
4-Mepy	4-methylpyridine
Me ₂ -violH	1,3-dimethylvioluric acid
mhpe	6-methyl-2-hydroxypyridine
MLCT	metal-to-ligand charge transfer
mnt	maleonitrile dithiolate
MO	molecular orbital
m.p.	melting point
MPiXCH ₂	meso-porphyrin-IX
MPiXDMCH ₂	meso-porphyrin-IX-dimethyl ester
mppl	3-methyl-1-phenylphosphole
[MV] ²⁺	1,1'-dimethyl-4,4'-bipyridinium dication (methylviologen or Paraquat)
[N(2amet)pipzH ₃] ³⁺	N-(2-ammoniumethyl)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-benzothiazolyl)methylamine
OAc	ethanoate

O-en-N-tnH ₄	3,4:9,10-dibenzo-1,12-diaza-5,8-dioxacyclopentadecane
OEPH ₂	octaethylporphyrin
ospha	octamethylpyrophosphoramide
s-O-quin	s-hydroxyquinoline anion
ORD	optical rotary dispersion
ornH	ornithine
OTLE	optically transparent thin layer electrode
ox	oxalate
par	pyridazine
PCH ₂	phthalocyanine
pdtaH ₄	propylenediaminetetraacetic acid
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
psbzpH	1-phenyl-3-methyl-4-benzoylpyrazole-5-one
pmtd	1,1,4,7,7-pentamethyl-1,4,7-triazaheptane (pentamethyldiethylenetriamine)
psfzpfH	1-phenyl-3-methyl-4-(trifluoroethanoyl)- pyrazole-5-one
1,2-pn	1,2-diaminopropane
1,3-pn	1,3-diaminopropane
PPIDBE	protoporphyrin-IX-dibutyl ester

PPIXDME	protoporphyrin-IX-dimethyl ester
ppl	1-phenylphosphole
PFP	Pariser-Parr-Pople
P(py) ₃	tris(2-pyridyl)phosphine
PQ	2-(2-pyridyl)quinoline
Pr	propyl
ⁱ 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
PY-4-NH ₂	4-aminopyridine
PY-4-NMe ₂	4-(N,N-dimethylamino)pyridine
pyNO	pyridine N-oxide
PY-2-OH	2-hydroxypyridine
pySalH	N-(2-pyridyl)salicylaldehyde
PY-3-SO ₃ H	pyridine-3-sulphonic acid
PZ	pyrazine
pzH	pyrazole
[pzMe] ⁺	N-methylpyrazinium cation
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> -ethylenebis(salicylideneimine)
sal ₂ phenH ₂	<i>N,N'</i> - <i>o</i> -phenylenebis(salicylideneimine)
sal ₂ propH ₂	<i>N,N'</i> -trimethylenabis(salicylideneimine)
sbtS	1-salicyl-4-benzylamidothiosemicarbazone
SCE	saturated calomel electrode
SCF	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	Neel temperature
taaH ₂	1,8-dihydrodibenzo[b,t][1,4,8,11]tetraaza-annulene
taci	1,4,7-triazacyclodecane
tach	<i>cis,cis</i> -1,3,5-triaminocyclohexane
tactd	1,4,8,11-tetraazacyclotetradecane
tacpd	1,4,8,12-tetraazacyclopentadecane
tame	1,1,1-tris(aminomethyl)ethane
tarH ₂	4-(2-thiazolylazo)resorcinol
tartH ₂	tartaric acid
tbcyclen	1,4,7,10-Br ₄ -[12]ane-1,4,7,10-N ₄

TBPH ₂	tetrabenzoporphyrin
TCDD	2,3,7,8-tetrachlorodibenzo- p-dioxin
tcne	tetracyanoethane
TCNQ	7,7,8,8-tetracyanoquinodimethane (2,5-cyclo- hexadiene-Δ1α,4α'-dimalonitrile)
tdcx	<i>P,P,P',P'</i> -tetrakis(2-diphenylphosphino- ethyl)-α,α'-diphospha-1,4-xylene
tedtaH ₄	thiobis(ethylenenitrilo)tetraacetic acid
teen	<i>N,N,N',N'</i> -tetraethyl-1,2-diaminoethane
tea	triethanolamine
terpy	2,2':6',2"-terpyridine
2,3,2-tet	1,4,8,11-tetrazaundecane
3,2,3-tet	1,5,8,12-tetrazadodecane
3,3,3-tet	1,5,9,13-tetraazatridecane
tetraphos	1,1,4,7,10,10-hexaphenyl-1,4,7,10-tetra- phosphadecane
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-thenyltrifluoropropanone
tim	2,3,9,10-Me ₄ -[14]-1,3,8,10-tetraene- 1,4,6,11-N ₄ (Me ₄ [14]tetraeneN ₄)
tipp	tri(isopropyl)phosphate
TIPPPH ₂	meso-tetra(isopropyl-4-phenyl)porphyrin
TLC	thin layer chromatography

tac	tetramethylcyclam
tmen	<i>N,N,N',N'</i> -tetramethyl-1,2-diaminoethane
thf ₃	thiomalic acid
tmp	trimethylphosphate
tms	tetramethylenesulphoxide
tutu	tetramethylthiourea
tua	tetramethylurea
tp	tris(2-(diphenylphosphino)ethyl)phosphine
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 (triethylene- tetraamine)
triphos	1,1,1-tris(diphenylphosphinomethyl)ethane
ttp	tri-4-tolylphosphate
TPH ₂	meso-tetra(4-tolyl)porphyrin
tu	thiourea
ump	uridine-5'-monophosphate
UV	ultraviolet
UVES	ultraviolet photoelectron spectroscopy
UV-VIS	ultraviolet-visible
UV-VIS-NIR	ultraviolet-visible-near infrared
ΔV [‡]	activation volume
violH ₃	violuric acid
VT	variable temperature

xan	xanthate, $[S_2C(OR)]^-$
xpes	X-ray photoelectron spectroscopy
ZFS	zero field splitting