

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
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
bipym	2,2'-bipyrimidine
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-chxn	<i>cis</i> -1,3-cyclohexanediamine
citH ₃	citric acid
3-CNacacH	3-cyanopentane-2,4-dione
cod	cycloocta-1,5-diene
cot	cyclooctatetraene
cotr	cyclooctatriene
cp	η^5 -cyclopentadienyl
cpa	<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-butanone-oximate)}borate
cysH	cysteine
dap	2,6-diethanoylpyridine
dbzmH	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-phenylenebis(dimethylarsine)
dien	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- <i>O</i> -diisopropylidene-2,3-dihydroxy-1,4-bis-(diphenylphosphino)butane
dipicH ₂	pyridine-2,6-dicarboxylic acid
dna	dimethylethanamide
dnbpdo	3,3'-dimethyl-2,2'-bipyridine <i>N,N'</i> -dioxide
dne	1,2-dimethoxyethane
dnen	<i>N,N'</i> -dimethyl-1,2-diaminoethane
dmf	dimethylmethanamide
dmg	dimethylglyoximate

dmgh ₂	dimethylglyoxime
dmih	5,5-dimethylhexane-2,4-dione
dmhpf	2,4-dimethyl-6-hydroxypyrimidine
dmpe	1,2-bis(dimethylphosphino)ethane
dmppl	3,4-dimethyl-1-phenylphosphole
dmpzlh	3,5-dimethylpyrazole
dmsO	dimethylsulphoxide
dmu	<i>N,N'</i> -dimethylurea
dpa _e	1,2-bis(diphenylarsino)ethane
dpa _m	bis(diphenylarsino)methane
dpa _q	8-(diphenylarsino)quinoline
dpen	<i>N,N'</i> -diphenyl-1,2-diaminoethane
dpg	diphenylglyoximate
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
dtoxH ₂	1,2-dithiooxalic acid
dttf	dibenzotetrathiafulvalene
DV	discrete variational
DVM	discrete variational method
ECL	electrochemiluminescence
eddaH ₂	<i>N,N'</i> -ethylenediaminediacetic 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
epyen	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
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
indaH	iminodiethanoic acid
indien	1,9-bis(4-imidazolyl)-2,5,8-triazanone
indpt	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
Meen	<i>N</i> -methyl-1,2-diaminoethane
Me ₂ en	<i>N,N</i> -dimethyl-1,2-diaminoethane
1-Meimid	1-methylimidazole
2,9-Me ₂ phen	2,9-dimethyl-1,10-phenanthroline
mhpH	6-methyl-2-hydroxypyridine
MLCT	metal-to-ligand charge transfer
mnt	maleonitrile dithiolate
MO	molecular orbital
m.p.	melting point
MPIXH ₂	<i>meso</i> -porphyrin-IX
MPIXDMEH ₂	<i>meso</i> -porphyrin-IX-dimethyl ester
mppl	3-methyl-1-phenylphosphole
[MV] ²⁺	1,1'-dimethyl-4,4'-bipyridinium dication (methyl viologen or Paraquat)
[<i>N</i> (2amet)pipzH ₃] ³⁺	<i>N</i> -(2-ammoniummethyl)piperazinium trication
nbd	[2.2.1]-bicyclohepta-1,3-diene
nic	nicotinamide
nmp	<i>N</i> -methyl-2-pyrrolidine
NMR	nuclear magnetic resonance
<i>N,N</i> -Et ₂ en	<i>N,N</i> -diethyl-1,2-diaminoethane
5-NO ₂ -phen	5-nitro-1,10-phenanthroline
np	2-naphthyl
NQR	nuclear quadrupole resonance
ntaH ₃	nitriuloethanoic acid
ntbt	tris(2-benzothiazolylmethyl)amine

OAc	ethanoate
O-en-N-trnH ₄	3,4:9,10-dibenzo-1,12-diaza-5,8-dioxacyclpentadecane
OEPh ₂	octaethylporphyrin
ompha	octamethylpyrophosphoramide
8-O-quin	8-hydroxyquinoline anion
ORD	optical rotary dispersion
ornH	ornithine
OTTLE	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
pmtd	1,1,4,7,7-pentamethyldiethylenetriamine
pmtfpH	1-phenyl-3-methyl-4-etrifluoroethanoylpyrazole-5-one
1,2-pn	1,2-diaminopropane
1,3-pn	1,3-diaminopropane
PPIXIBE	protoporphyrin-IX-dibutyl ester
PPIXIME	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
ⁱ Pr	iso-propyl (OMe 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
pzlH	pyrazole
φ	quantum yield
quin	quinoline
quin-8-OH	8-hydroxyquinoline
<i>r</i>	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> -trimethylenebis(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-benzoquinone
sqH ₂	squaric acid
SW	scattered wave
T _C	Curie temperature
T _N	Néel temperature
taah ₂	1,8-dihydrodibenzo[<i>b,i</i>][1,4,8,11]tetraazaannulene
tach	<i>cis,cis</i> -1,3,5-triaminocyclohexane
tame	1,1,1-tris(aminomethyl)ethane

tarH ₂	4-(2-thiazolylazo)resorcinol
tarth 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-Δ1α,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-tetrazaundecane
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
TIPPP _H ₂	meso-tetra(isopropyl-4-phenyl)porphyrin
TLC	thin layer chromatography
tmc	tetramethylecyclam
tmen	N,N,N',N'-tetramethyl-1,2-diaminoethane
tmH ₃	thiomalic acid
tmp	trimethylphosphate
tmso	tetramethylenesulphoxide
tmtu	tetramethylthiourea
tmu	tetramethylurea
TPPH ₂	meso-tetraphenylporphyrin
tpt	2,4,6-tri(2-pyridyl)-1,3,5-triazine
tren	2,2',2''-triaminotriethylamine
trien	1,8-diamino-3,6-diazaoctane (triethylenetetraamine)

triphos	1,1,1-tris(diphenylphosphinomethyl)ethane
ttp	tri-4-tolylphosphate
TTPH ₂	<i>meso</i> -tetra(4-tolyl)porphyrin
tu	thiourea
UV	ultraviolet
UVPES	ultraviolet photoelectron spectroscopy
UV-VIS	ultraviolet-visible
UV-VIS-NIR	ultraviolet-visible-near infrared
$\Delta V^\ddagger$	activation volume
VT	variable temperature
xan	xanthate, $[\text{S}_2\text{C}(\text{OR})]^-$
XPES	X-ray photoelectron spectroscopy
ZFS	zero field splitting