

List of Abbreviations

A- <i>f</i> -GO	Amino functionalized graphene oxide
AFM	Atomic force microscopy
APTS	3-aminopropyltriethoxysilane
APTES	3-aminopropyltriethoxysilane
APTMS	3-aminopropyltrimethoxysilane
ATRP	Atom transfer radical polymerization
B3LYP	Becke three parameters with Lee-Yang-Perdew correlation functional
BA	Benzoic acid
BE	Binding energy
BET	Brunauer-Emmett-Teller
BSA	Bovine Serum Albumin
BzA	Benzyl alcohol
BzH	Benzaldehyde
CeO ₂	Cerium oxide
Cl- <i>f</i> -GO	Chloro functionalized graphene oxide
CMG	Chemically modified graphene
CNTs	Carbon nanotubes
CP	Cross polarization
CVD	Chemical vapour deposition
DOS	Density of states
DCC	N,N'-dicyclohexyl-carbodiimide
DFT	Density functional theory

DMF	Dimethylformamide
DMSO	Dimethyl sulphoxide
DRIFT	Diffuse reflectance infrared fourier transform
EDC	1-ethyl-3-(3-dimethylaminopropyl)-carbodiimide
ETV	Electrothermal vaporization
FET	Field-effect transistors
FLG	Few layered graphene
FTIR	Fourier-transform infrared
GA	Gluconic acid
GC	Gas chromatography
GO	Graphene oxide
H ₂ PtCl ₆	Chloroplatinic acid
HAuCl ₄	Tetrachloro(hydrido)gold
HATU	2-(7-aza-1H-benzotriazole-1-yl)-1,1,3,3-tetramethyluronium hexafluorophosphate
HF	Hartree-Fock
HOMO	Highest occupied molecular orbital
ICP-OES	Inductively coupled plasma optical emission spectroscopy
IL-NH ₂	Ionic liquid 1-(3-aminopropyl)-3-methylimidazolium bromide
(L) _n -f-GO	Ligand functionalized graphene oxide
LEDs	Light-emitting diodes
LUMO	Lowest unoccupied molecular orbital
MAS	Magic angle spinning
M(L) _n -f-GO	Metal ligand functionalized graphene oxide

MO	Molecular orbitals
MOFs	Metal-organic frameworks
MPS	(3-Mercaptopropyl)trimethoxysilane
NH ₃ -TPD	Ammonia temperature programmed desorption
NMR	Nuclear magnetic resonance
PAC	Phenylacetaldehyde
Pd(OAc) ₂	Palladium acetate
PVA	Polyvinyl alcohol
rGO	Reduced GO
Salen	N,N'-bis(4-hydroxysalicylaldehyde)ethylenediamine
SO	Styrene oxide
SOCl ₂	Thionyl chloride
TEM	Transmission electron microscopy
TGA	Thermogravimetric analysis
UV/Vis	Ultraviolet/Visible
XPS	X-ray photoelectron spectroscopy
XRD	X-ray diffraction pattern