List of Abbreviations

ABS	acrylonitrile butadiene styrene
ABS	arc bond sputtering
AEM	analytical electron microscopy
AES	Auger electron spectroscopy
AFM	atomic force microscopy
ALD	atomic layer deposition
APGD	atmospheric pressure glow discharge
APT	atom-probe tomography
AR	angle-resolved
AR	antireflective
ARE	activated reactive evaporation
ARXPS	angle resolved X-ray photoelectron spectroscopy
ASF	atomic sensitivity factor
ASH	atomic scale heating
ATR	attenuated total reflection
BARE	biased activated reactive evaporation
BE	binding energy
BF	bright field
CARS	coherent anti-Stokes Raman scattering
CCD	charge-coupled device
CCP	capacitively coupled plasma
CDC	carbide-derived carbon
Ch	chalcogen
CIGS	copper indium gallium diselenide
CIP	chemical ion plating
CIS	copper indium diselenide
CMA	coaxial cylindrical mirror analyzer
C:Me	metal-containing carbon
COF	coefficient of friction
CQ	collisional quenching
CSD	charge state distribution
CTEM	conventional transmission electron microscopy
CVD	chemical vapor deposition
DBD	dielectric barrier discharge
DC-MS	direct-current magnetron sputtering
DF	dark field

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DFT	density functional theory
dHB	duMond–Hart–Bartels
DIET	desorption induced by electronic transitions
DLC	diamond-like carbon
DRAM	dynamic random access memory
DRS	direct recoiling spectroscopy
DRV	dimer row vacancy
DVD	directed vapor deposition
DVL	dimer vacancy line
EAG	Evans Analytical Group
EB	electron beam
EBSD	electron backscattering diffraction
EC	electrochromic
ECR	electron cyclotron resonance
ED	electron diffraction
EDTA	ethylene diamine tetraacetic acid
EDXS	energy-dispersive X-ray spectroscopy
EEDF	electron energy distribution function
EELS	electron energy-loss spectroscopy
EIS	electrochemical impedance spectroscopy
ELNES	energy loss near-edge structure
ELO	epitaxial lateral overgrowth
EM	effective medium
EMA	effective medium approximation
EMSL	Environmental Molecular Sciences Laboratory
ER	erosion resistance
ERDA	elastic recoil detection analysis
ERD-TOF	elastic recoil detection in the time-of-flight regime
ESCA	electron spectroscopy for chemical analysis
ESD	electron-stimulated desorption
ESZM	extended structure zone model
ETFE	ethylene-tetrafluoroethylene
EXAFS	X-ray absorption fine structure
EXELFS	extended electron energy loss fine structure
FCA	filtered cathodic arc
FCC	Federal Communications Commission
FHC	fused hollow cathode
FIB	focused ion beams
FTIR	Fourier transform infra-red spectroscopy
GB	grain boundary
GDMS	glow discharge mass spectrometry

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GLAD	glancing angle (of incidence) deposition
GMR	giant magnetoresistance
GRIN	gradient-index
GRXRD	glancing-incidence X-ray diffraction
HA	hydroxyapatite
HAADF	high-angle annular dark field
HEIS	high-energy ion scattering
HEMT	high electron mobility transistor
H-HEAD	hybrid hollow electrode activated discharge
HIPIMS	high-power impulse magnetron sputtering
HMCTSZN	hexamethyl cyclotrisilazane
HMDSN	hexamethyl disilazane
HMDSO	hexamethyl disiloxane
HPPMS	high-power pulsed magnetron sputtering
HRPVD	high-rate physical vapor deposition
HRTEM	high-resolution transmission electron microscopy
HRXRD	high-resolution X-ray diffraction
IA	ion assist
IAD	ionization assisted deposition
IBAD	ion beam assisted deposition
IBED	ion beam enhanced deposition
IC	integrated circuit
IC	internal conversion
ICP	inductively coupled plasma
IEA	ion energy analyzer
IEDF	ion energy distribution function
IGC	inert gas condensation
IMFP	inelastic mean free path
IPA	isopropyl alcohol
IPVD	ionized physical vapor deposition
IR	infrared
ISC	intersystem crossing
ISE	ion-induced secondary electron
ISS	ion scattering spectroscopy
ITO	indium–tin oxide
ITU	International Telecommunications Union
IVD	ion vapor deposition
JVD	jet vapor deposition
KE	kinetic energy
KPZ	Kardar–Parisi–Zhang
LAFAD	large-area filtered arc deposition

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LAIGC	laser-assisted inert gas condensation
LC	liquid crystal
LEED	low-energy electron diffraction
LEIS	low-energy ion scattering
LEL	lower explosive limit
LIF	laser induced fluorescence
LML	liquid multilayer
LPPD	low-pressure plasma deposition
LSCF	lanthanum strontium cobalt iron oxide
MBE	molecular beam epitaxy
MD	molecular dynamics
MDP	molecularly doped polymer
MEIS	medium-energy ion scattering
MEMS	microelectromechanical system
MF	mid-frequency
MF/DMS	mid-frequency/dual magnetron sputtering
MH	Mullins–Herring
MIM	metal–insulator–metal
ML	monolayer
MLD	molecular layer deposition
MNS	metal-nitride semiconductor
MOCVD	metal-organic chemical vapor deposition
MoDTC	molybdenum dialkyl dithiocarbamate
MS	magnetron sputtering
MS	mass spectrometry
MSRI	mass spectroscopy of recoiled ions
MW	microwave
nc	nanocomposite
NCD	nanocrystalline diamond
NIR	near infrared
NIST	National Institute of Standards and Technology
NPL	National Physical Laboratory
NRA	nuclear reaction analysis
NSOM	near-field scanning optical microscopy
OCP	open circuit potential
OES	optical emission spectroscopy
OIF	optical interference filter
OLED	organic light-emitting device
OTR	oxygen transmission rate
PACVD	plasma-assisted chemical vapor deposition
PC	polycarbonate
PC	photonic crystal

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pc-D	polycrystalline diamond
PECVD	plasma-enhanced chemical vapor deposition
PET	polyethylene terephthalate
PICVD	plasma impulse chemical vapor deposition
PIIID	plasma immersion ion implantation deposition
PIXE	proton-induced X-ray emission
PLD	pulsed laser deposition
PLZT	lead lanthanum zirconate titanate
PML	polymer multilayer
PMMA	polymethyl methacrylate
PMS	plasma mass spectrometry
PPFC	plasma polymerized fluorocarbon
PPHC	plasma polymerized hydrocarbon
PPML	plasma polymer multilayer process
PPOS	plasma polymerized organosilicone
PTFE	polytetrafluoroethylene
PVD	physical vapor deposition
PZT	lead–zirconium–titanate
QA	QuinAcridone
QD	quantum dot
RBS	Rutherford backscattering spectrometry
RF	radio frequency
RHEED	reflection high-energy electron diffraction
RIE	reactive ion etching
RIP	reactive ion plating
RMS	Roughness Measurement System
RPE	reactive plasma etching
RS	Raman spectroscopy
RT	room temperature
RTSE	real-time spctroscopic ellipsometry
SAE	Society of Automotive Engineers
SAED	selected area electron diffraction
SBD	serial bideposition
SCF	supercritical fluid
SEG	selective epitaxial growth
SEM	scanning electron microscopy
SERS	surface-enhanced Raman spectroscopy
SIMS	secondary ion mass spectroscopy
S-K	Stranski–Krastanow
SPM	scanning probe microscopy
SS	stainless steel
SST	supersonic transport

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STEM	scanning transmission electron microscopy
STF	sculptured thin film
STM	scanning tunneling microscopy
SZM	structure zone model
TACVD	thermally activated CVD
TCO	transparent conductive oxide
TCP	tricalcium phosphate
TE	transverse electric
TEG	triethyl gallium
TEM	transmission electron microscopy
TEOS	tetra ethoxysilane
TEOT	tetra ethoxy titanium
TFEL	thin film electroluminescent
TIPT	tetraisopropyltitanate
TLK	Terrace, Ledge, Kink
TM	transverse magnetic
TMA	trimethyl-aluminum
TMAA	trimethyl-amine alane
TMG	trimethyl gallium
TOF	time-of-flight
TPD	thermally programmed desorption
TPO	thermoplastic olefin
TRPL	time-resolved photoluminescence
UHV	ultrahigh vacuum
ULSI	ultra large scale integration
UV	ultraviolet
VASE	variable angle spectroscopic ellipsometry
VLSI	very large scale integration
VOC	volatile organic compound
VPD	vacuum polymer deposition
VPE	vapor phase epitaxy
VR	vibrational relaxation
VUV	vacuum ultraviolet
WVTR	water vapor transmission rate
XANES	X-ray absorption near-edge structure
XPS	X-ray photoelectron spectroscopy
XRD	X-ray diffraction
XRR	X-ray reflectivity
XTEM	cross-sectional transmission electron microscopy
YSZ	yttria-stabilized zirconia
ZDDP	zinc dialkyl dithiophosphate

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