Common abbreviations

δ	Delta
α	Elevation angle
λ	Wavelength
Φ	Polarization potential
θ	Theta
AC	Activated carbon
ACN	Acetonitrile
AFC	Alkaline fuel cell
AOR	Alcohol oxidation reaction
ASU	Air separation unit
ATR	Autothermal reforming of methane
BFB	Bubbling fluidized bed
BP	Black phosphorus
CB	Conduction band
CBM	Conduction band minimum
CCS	Carbon capture and storage
CCS	CO_2 capture and storage
CCT	Clean coal technology
CE	Coulombic efficiency
CFS	Capacitive faradic storage
C_H	Helmholtz layer capacitance
CHP	Combined heat and power
CLG	Chemical looping gasifier
CNF	Carbon nanofibers
CNT	Carbon nanotubes
CO	Carbon monoxide
CO_2	Carbon dioxide
COF	Covalent organic frameworks
COS	Carbonyl sulfide
CP	Conductive polymers
CQD	Carbon quantum dots
CS_2	Carbon disulfide
C_{SC}	Charge layer capacitance
CTMA	Cetyltrimethylammonium chloride
CV	Cyclic voltammetry
CVD	Chemical vapor deposition
des	Desorption
DFT	Density functional theory
dI	Decrement of the light intensity
DL	Double layer
DMF	*N*, *N*-Dimethylacetamide
DMFC	Direct methanol fuel cell
DOS	Density of states
dx	Film thickness
E	Occupied by the electrons

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*E*c	CB energy
E_F	Fermi level
ESPW	Electrochemical stable potential window
ESR	Equivalent series resistance
*E*v	VB energy
FEC	Fluoroethylene carbonate
FOM	Figure of merit
GHG	Greenhouse gases
GO	Graphene oxides
GPL	Gel polymer electrolyte
H_2O	Water
H_2S	Hydrogen sulfide
HCN	Hydrogen cyanide
HER	Hydrogen evolution reaction
HF	Heating fluid
HHV	Higher heating value
HOMO	Highest occupied molecular orbital
HOR	Hydrogen oxidation reaction
HRSG	Heat recovery steam generator
HTMM	High-temperature mixing method
HyPr-RING	Hydrogen production by reaction-integrated novel gasification
hv	Photon energy
I	Light intensity
IEA	International Energy Agency
IGCC	Integrated coal gasification combined cycle
IGFC	Integrated coal gasification fuel cell
IHP	Inner Helmholtz plane
ISE	Inorganic solid electrolytes
k	Boltzmann constant
LCI	Life cycle impact
LDH	Layered double hydroxides
LSV	Linear sweep voltammetry
LUMO	Lowest unoccupied molecular orbital
MCFC	Molten carbonate fuel cell
MEA	Membrane-electrode assemblies
MeOH	Methanol
MEXT	Ministry of Education, Culture, Sport, Science, and Technology of Japan
MH	Metal hydride
MIEC	Mixed ionic/electronic conductors
MO	Methyl orange
MOF	Metal-organic frameworks
*N*c	Effective densities of CB
NFCS	Non-faradaic capacitive storage
NMP	*N*-Methyl-2-pyrrolidone
*N*v	Effective densities of VB
OER	Oxygen evolution reaction
OHP	Outer Helmholtz plane
OOH	Adsorbed (per) hydroxide species
OOR	Oxidation of organic reactant

ORR	Oxygen reduction reaction
PAFC	Phosphoric acid fuel cell
PAH	Polycyclic aromatic hydrocarbons
PANI	Porous nanoflower polyaniline electrode
PCE	Power conversion efficiency
PCM	Phase change material
PCP	Porous coordination polymers
PEMFC	Proton exchange membrane fuel cell
PHES	Pumped hydroenergy storage
PM	Particulate matter
PPy	Polypyrrole
PVA	Polyvinyl alcohol
QFL	Quasi-Fermi level
RDE	Rotating disk electrode
RDS	Rate-determining step
ROS	Reactive oxygen species
SDC	Static dielectric constant
SEI	Solid electrolyte interphase
SHE	Standard hydrogen electrode
SIB	Sodium-ion batteries
SNCR	Selective noncatalytic reduction
SOFC	Solid oxide fuel cell
SPE	Solid polymer electrolyte
SRM	Steam reforming of methane
SSE	Solid-state electrolyte
STEM	Scanning transmission electron microscopy
STP	Standard temperature and pressure
TES	Total energy supply
TFE	Tetrafluoroethylene copolymer
TGA	Thermogravimetric analysis
TiO_2	Titanium dioxide
TMB	Transition metal based
TMO	Transition metal oxides
TOC	Total organic carbon
TXM	Transmission X-ray microscopy
UPD	Underpotential deposition
VB	Valence band
VBM	Valence band minimum
VOC	Volatile organic compounds
WGS	Water-gas shift
WtE	Waste to energy
XAS	X-ray absorption spectroscopy
XRD	X-ray diffraction