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List of abbreviations

Abbreviation	Meaning
AAO	Anodic aluminum oxide
AC	Alternating current
CB	Conduction band
CBH	Correlated barrier hopping
CCD	Charge-coupled device
CSA	Camphorsulfonic acid
DBSA	Dodecylbenzene sulfonic acid
DC	Direct current
DDW	Double distilled water
DOS	Density of states
EDOT	3,4-ethylenedioxythiophene
eV	electron Volt
FTIR	Fourier transforms infrared spectroscopy
FWHM	Full-width at half-maximum
HOMO	Highest occupied molecular orbital
LUMO	Lowest unoccupied molecular orbital
Mott-VRH	Mott-Variable range hopping
MR	Magnetoresistance
OLPT	Overlapping large polaron-tunneling
PA	Polyacetylene
PEDOT	Poly(3,4-ethylenedioxythiophene)
PPy	Polypyrrole
PTMs	Particle track-etched polymeric membranes
QMT	Quantum mechanical tunneling
SAED	Selected area electron diffraction
SDS	Sodium dodecyl sulfate
SP	Small polaron
TGA	Thermogravimetric analysis
V	Volt
VB	Valence band

VRH	Variable range hopping
XRD	X-ray diffraction

List of symbols

Symbol	Meaning
Å	Angstrom
B	Magnetic field
C	Capacitance
°C	Degree Celsius
d	Thickness of the sample
e	Electronic charge
E_a	Activation energy
E_d	Activation energy of thermal degradation
E_F	Fermi energy
G	Conductance
$\hbar$	Reduced Planck's constant
K	Kelvin
K	Degree of crystallinity
k_B	Boltzmann constant
L	Crystallite size
L_B	Magnetic relaxation length
L_{loc}	Localization length
M^*	Complex electric modulus
M'	Real part of electric modulus
M''	Imaginary part of electric modulus
$N(E_F)$	Density of states
R_{hop}	Hooping length
R_ω	Hopping distance at a particular angular frequency ω
T	Temperature
T_{Mott}	Characteristic Mott temperature
T_{onset}	Onset decomposition temperature
T_{rpd}	Rapidest decomposition temperature
W	Reduce activation energy
W_b	Barrier height
W_M	Binding energy

X	Degree of conversion
Z^*	Complex impedance
Z'	Real part of impedance
Z''	Imaginary part of impedance
ω	Angular frequency
ρ	Resistivity
σ_{dc}	DC conductivity
ε^*	Complex dielectric permittivity
ε'	Real part of dielectric permittivity
ε''	Imaginary part of dielectric permittivity
ε_o	Dielectric permittivity at free space
τ	Relaxation time
λ	Wavelength
θ	Bragg diffraction angle
ϕ	Phase angle