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"Age does not make a person mature, but experience does…"

Deepak Bharti
Ph.D. Student

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List of Symbols

Symbol	*Description*
α	Ratio of the effective density of states between the trap level and the delocalized band edge
a	Lattice Constant
A	Effective Device Area
β	Temperature Dependent Dispersion Parameter
C_i or C_{ox}	Capacitance Density
D_{it}	Interface Trap Density
∂_d	Hansen's parameter signifying dispersive component of the intermolecular forces
∂_p	Hansen's parameter signifying polar component of the intermolecular forces
∂_h	Hansen's parameter signifying hydrogen bonding component of the intermolecular forces
e or q	Electronic Charge
E_b	Polaron Binding Energy
E_t	Trap Density
I_{DS}	Drain Current
I_{photo}	Drain Current under Illuminated State
I_{dark}	Drain Current under Dark State
I_{ON}	Maximum ON-State Current
I_{OFF}	Minimum OFF-State Current
I_F	Integrated Intensity of Entire X ray Diffractogram
$I_{(00l)}$	Integrated Intensity of the (00*l*) Peak
J	Electron Transfer Energy
k	Boltzmann's Constant
L	Length of Transistor Channel
λ	Wavelength of Light Source Used
λ_{peak}	Peak Wavelength in the Emission Spectrum of the Light Source Used
m	Slope of Square-root of Drain Current
μ	Field Effect Mobility
μ_{max}	Maximum Mobility
μ_{sat}	Saturation Mobility
μ_{avg}	Average Mobility
μ_{GB}	Grain boundary mobility
μ_0	Bulk mobility inside the grain
P	Current Modulation
P_{max}	Maximum Current Modulation
P_i	Power of Incident Illumination
$\Phi_{(00l)}$	Integrated Intensity Ratio for a Diffraction Peak Corresponding to (00*l*) Plane
R_S	Mismatch in the Solubility Parameters
R	Photo-responsivity
R_{max}	Maximum Photo-responsivity
R_{bend}	Bending Radius
τ	Relaxation Time
t_{int}	Integration or Illumination Time
t_{sub}	Thickness of the Substrate
T	Absolute Temperature
V_{GS}	Gate to Source Voltage
V_{DS}	Drain to Source Voltage
V_{TH}	Threshold Voltage
V_{TO}	Initial Threshold Voltage
ΔV_T	Shift in Threshold Voltage

$V_{TH,sat}$	Final Threshold Voltage of the Saturated Condition
$\Delta V_{TH,sat}$	Difference in the Threshold Voltages of the Dark and Final Saturated Conditions
$V_{GS,bias}$	Gate to Source Bias applied during Illumination
W	Width of Transistor Channel

List of Abbreviations

Abbreviation	*Full form*
Au	Gold
AFM	Atomic Force Microscopy
ALD	Atomic Layer Deposition
Cap.	Capacitance Density
CMOS	Complementary Metal Oxide Semiconductor
CVD	Chemical Vapor Deposition
C-V	Capacitance-Voltage
Cu-PC	Copper(II) phthalocyanine
C8-BTBT	2,7-Dioctyl[1]benzothieno[3,2-b][1]benzothiophene
Dielec.	Dielectric
DiF-TES-ADT	2,8-Difluoro-5,11-bis(triethylsilylethynyl)anthradithiophene
DNTT	Dinaphtho[2,3-*b*:2',3'-*f*]thieno[3,2-*b*]thiophene
EGOFET	Electrolyte Gated OFET
EQE	External Quantum Efficiency
FWHM	Full Width At Half Maximum
GIXRD	Grazing Incidence XRD
HOMO	Highest Occupied Molecular Orbital
HfO_2	Hafnium dioxide
I-V	Current-Voltage
ISOFET	Ion Sensitive OFET
ITO	Indium Tin Oxide
KITE	Keithley Interactive Test Environment
LUMO	Lowest Unoccupied Molecular Orbital
MOSFET	Metal Oxide Field-Effect Transistor
MEH-PPV	Poly[2-methoxy-5-(2-ethylhexyloxy)-1,4-phenylenevinylene]
OFET	Organic Field-Effect Transistor
OTFT	Organic Thin Film Transistor
OLED	Organic Light Emitting Diode
OSC	Organic Semiconductor
Op. Vol.	Operating Voltage
PSPD	Position-Sensitive Photo Diode
PVP	Poly(4-vinylphenol)
PS	Polystyrene
PET	Polyethylene Terephthalate
PGMEA	Propylene Glycol Monomethyl Ether Acetate
P3HT	Poly(3-hexylthiophene-2,5-diyl)
PPV	Poly(*p*-phenylene vinylene)
PTAA	Poly[bis(4-phenyl)(2,4,6-trimethylphenyl)amine]
PMMA	Poly(methylmethacrylate)
P-αMS	Poly(α-methylstyrene)
PTCDI-$C_{13}H_{27}$	N,N′-ditridecyl-3,4,9,10-perylenetetracarboxylic diimide
PQT-12	Poly(3,3‴-didodecylquaterthiophene)
RFID	Radio Frequency Identification
Subs.	Substrate
Si	Silicon
SiO_2	Silicon dioxide

SEM	Scanning Electron Microscopy
SCS	Semiconductor Characterization System
SMU	Source Measuring Unit
SS	Sub-threshold Slope
SVA	Solvent Vapor Annealing
TIPS-pentacene	6,13-Bis(triisopropylsilylethynyl)pentacene
TIPS-PEN	TIPS-pentacene
UV	Ultra-Violet
XRD	X-ray Diffraction