Dedicated to Lord Shiva & Sankatmochana

For the Supremacy and to the Redeemer of My soul

Dedicated to My Family

For their Endless love, support, and Encouragement

Dedicated to My Supervisors

For their Endless Motivation, encouragement, and Teaching Skills

CERTIFICATE

It is certified that the work contained in the thesis entitled "***Fabrication and Characterization of Organic Thin Film Transistors for Ammonia Sensing Application***" by "***Ankit Verma***" has been carried out under our supervision and that this work has not been submitted elsewhere for a degree.

It is further certified that the student has fulfilled all the requirements of Comprehensive Examination, Candidacy, and SOTA for the award of Ph.D. Degree.

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Ankit Verma

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LIST OF ABBREVIATIONS

Abbreviation	Details
AFM	Atomic Force microscopy
OTFT	Organic Thin film transistor
FETs	Field-Effect Transistors
HOMO	Highest Occupied Molecular Orbital
LCAO	Linear Combination of Atomic Orbitals
LUMO	Lowest Unoccupied Molecular Orbital
MOS	Metal-oxide-semiconductor
MOSFET	Metal Oxide Semiconductor Field-Effect Transistor
OFETs	Organic Field-Effect Transistors
OLED	Organic Light-Emitting Diode
OLET	Organic Light-Emitting Transistor
P3HT	Poly(3-hexylthiophene)
PANI	Polyanilines
PBTTT-C14	Poly[2,5-bis(3-tetradecylthiophen-2-yl)thieno[3,2-b]thiophene]
PEDOT	Poly(3,4-ethylenedioxythiophene)
PEN	Polyethylene naphthalate
PET	Poly(ethylene terephthalate)
ppm	Part per million
ppp	Poly-para-phenylene
PPT	2,8-Bis(diphenyl phosphoryl)dibenzo[b,d]thiophene
PV	Polyphenylene Vinylene
PQT-12	Poly(3, 3‴-dialkylquaterthiophene)
PT	Polythiophene
SEM	Scanning Electron Microscopy
SMU	Source and Measuring Unit
TEM	Transmission electron microscopy
TFT	Thin Film Transistor
UV-Vis	Ultraviolet-Visible
XRD	X-ray Diffraction

LIST OF SYMBOLS

Symbol	Abbreviation
E_G	Energy Bandgap
E_C	Bottom of the Conduction Band
E_V	Bottom of the Valence Band
α	Absorption Coefficient
C_{ox}	Capacitance per unit area of Insulator
CV	Capacitance-Voltage
L	Channel Length of Transistor
W	Channel Width of Transistor
R^2	Correlation Coefficient
ϵ_r	Dielectric Permittivity of SiO_2
I_{DS}	Drain to Source Current
V_{DS}	Drain to Source Voltage
E_F	Fermi Energy Level
S	Gas Response
V_{GS}	Gate to Source Voltage
P	Incident Optical Power
μ	Mobility
E_O	Neutral Level
t_{ox}	Oxide Gate Thickness
SS	Subthreshold Swing
V_{th}	Threshold Voltage
g_m	Transconductance
Λ	Wavelength