

## LIST OF ABBREVIATIONS

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%	Percent
A.U.	Arbitrary units
ASTM	American Society for Testing and Materials
ATR	Attenuated Total Reflectance
bb1	Barrels
BET	Brunauer-Emmett-Teller
BJH	Barrett-Joyner-Halenda
Btu	British thermal units
BT	Boiling temperature
cm <sup>-1</sup>	Per centimeter
CO <sub>2</sub>	Carbon dioxide
°C	Degree centigrade
<sup>13</sup> C-NMR	Carbon nuclear magnetic resonance
CCD	Central Composite Design
CI engine	Compression Ignition engine
DTA	Differential thermal analysis
DTG	Derivative thermogravimetry
EBP Programme	Ethanol Blended Petrol Programme
EDX	Energy dispersive X-ray spectroscopy
E-factor	Envionement Factor
EIA	Environmental Impact Assessment
EU	European Union
FAME	Fatty acid methyl ester
FFA	Free fatty acids
FSSAI	Food Safety and Standards Authority of India
FT-IR	Fourier-Transform Infra-red Spectroscopy
g	Gram
g/cm <sup>3</sup>	Gram per centimeter cube
GC-MS	Gas chromatography-Mass Spectroscopy
h	Planck's constant

h	Hour
<sup>1</sup> H-NMR	Proton nuclear magnetic resonance
IEA	International Energy Agency
IMO	International Maritime Organization
JCPDS	Joint Committee of Powder Diffraction Standard
K	Kelvin
k <sub>b</sub>	Boltzmann's constant
KOME	Karanja oil methyl ester
m/z	Mass per charge
mbpd	Million barrels per day
ME	Methyl ester
mg	Milligram
min <sup>-1</sup>	Per minute
MJ/kg	Megajoules per kilogram
mm <sup>2</sup> /s	Square millimeter/second
Mt	Metric tonnes
MTOE	Million tonnes oil equivalent
MOME	Mahua oil methyl ester
nm	Nanometer
OECD	Organization for Economic Co-operation and Development
OMCs	Oil Marketing Companies
OPEC	Organization of Petroleum Exporting Countries
R	Universal gas constant
R.T.	Room temperature
RSM	Response Surface Methodology
rpm	Revolutions per minute
s	Seconds
SEM	Scanning Electron Microscopy
TGA	Thermogravimetric analysis
TMS	Tetramethylsilane
TOF	Turnover frequency
UCO	Used cooking oil

USA	United States of America
UT	Union Territory
wt%	Weight percent
XPS	X-Ray Photo Spectroscopy
XRD	X-Ray diffraction
$\theta$	Theeta
$\lambda$	Lambda