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All help received by her from various sources have been duly acknowledged. No part of this thesis has been submitted elsewhere for award of any other degree.

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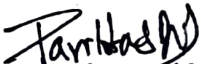
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This is to certify that the thesis entitled "*Copper based Catalyst Design and Methodology Development for Cyanation and Chan-Lam Cross-Coupling Reactions*" submitted by **Ms. Rakhee Saikia** to the School of Sciences, Tezpur University in partial fulfillment of the award of the degree of Doctor of Philosophy in the Department of Chemical Sciences has been examined by us on 21.12.22 and found to be satisfactory.

The committee recommends for the award of the degree of Doctor of Philosophy.


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Abbreviations and Symbols

Δ	heat
%	percentage
δ	Chemical shift
J	Coupling constant
Å	Angstrom
Ar	Aryl
Ac	Acetyl
AIBN	2,2'-Azobisisobutyronitrile
^t BuOH	Tertiary butanol
BET	Brunauer-Emmett-Teller surface area analysis
BJH	Barrett-Joyner-Halenda method
br	broad
°C	degree Centigrade
CV	Cyclic Voltammetry
DMEDA	1,2-Dimethylethylenediamine
DABCO	1,4-Diazabicyclo[2.2.2]octane
DBU	1,8-Diazabicyclo[5.4.0]undec-7-ene
DMAc	Dimethylacetamide
DIPEA	<i>N,N</i> -diisopropylethylamine
DMSO	Dimethylsulfoxide
DMF	<i>N,N</i> -dimethylformamide
DDQ	2,3-Dichloro-5,6-dicyano-1,4-benzoquinone
DCE	Dichloroethane
DCM	Dichloromethane
EDG	Electron donating group
EWG	Electron withdrawing group
EDX	Energy Dispersive X-ray analysis
equiv.	equivalent
EPR	Electron Paramagnetic Resonance
ESI-MS	Electron Spray Ionization-Mass Spectrometry

FT-IR	Fourier transformed infra-red spectroscopy
g	gram
GO	Graphene oxide
HRMS	High Resolution Mass Spectrometry
h	hour(s)
HOMO	Highest Occupied Molecular Orbital
ICP-AES	Inductively Coupled Plasma Atomic Emission Spectroscopy
IP	Isopropanol
LUMO	Lowest Unoccupied Molecular Orbital
MCIP	Mesoporous covalent imine porous material
PI-COF	Polyimide covalent organic framework
mmol	milli mole(s)
MHz	Mega-Hertz
Me	Methyl
m	multiplet
mg	milli gram(s)
MS	Molecular Sieves
mL	milli Litre(s)
<i>m/z</i>	Atomic mass units per charge
nm	nano metre(s)
NCTS	<i>N</i> -cyano- <i>N</i> -phenyl- <i>p</i> -toluenesulfonamide
NIS	<i>N</i> -iodosuccinimide
NP	nanoparticle
NHC	<i>N</i> -heterocyclic carbene
NMR	Nuclear Magnetic Resonance spectroscopy
ppm	parts per million
1,10-Phen	1,10-Phenanthroline monohydrate
PEG	Polyethylene glycol
p-XRD	Powder X-ray diffraction analysis
SHE	Standard Hydrogen Electrode
TBACN	Tertiarybutylammonium cyanide
TBAA	Tetrabutylammonium acetate

NIS	<i>N</i> -iodosuccinimide
rt	room temperature
SB	Schiff base
SPR	Surface Plasmon Resonance
SEM	Scanning Electron Microscope
TEM	Transmission Electron Microscope
TLC	Thin Layer Chromatography
TMSCN	Trimethylsilyl cyanide
TEMPO	(2,2,6,6-tetramethylpiperidin-1-yl)oxyl
TMPDA	<i>N,N,N',N'</i> -tetramethyl-1,3-diaminopropane
TMEDA	Tetramethylethylenediamine
TD-DFT	Time Dependent Density Functional Theory
UV-Vis	Ultra violet-visible
WEBPA	Water Extract of Banana Peel Ash
w.r.t	with respect to
XPS	X-ray Photoelectron Spectroscopy

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