

***Bioinspired Synthesis of Metallic and Non-metallic
Nanoparticles and Delving their Pharmacological, Biological,
Cosmetic and Nanoswitching applications***

Submitted by

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CERTIFICATE

This is to certify that the thesis entitled “**Bioinspired Synthesis of Metallic and Non-metallic Nanoparticles and Delving their Pharmacological, Biological, Cosmetic and Nanoswitching applications**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for the award of the **Degree of Doctor of Philosophy in Chemistry**, is a record of original research work done by **Akhila.C**, during the period of her study (July 2018 – December 2023) in the Department of Chemistry, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, under my supervision and guidance and the thesis has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or similar title to any candidature of any other university.

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DECLARATION

I hereby declare that the thesis entitled “**Bioinspired Synthesis of Metallic and Non-Metallic Nanoparticles and Delving their Pharmacological, Biological, Cosmetic and Nanoswitching applications**” submitted to Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore, for the award of the **Degree of Doctor of Philosophy in Chemistry**, is a record of original research work done by me under the supervision and guidance of **Dr.P.Lalitha, M.Sc., M.Phil., Ph.D., Director (i/c) Research & Development and Professor, Department of Chemistry, Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore** and that it has not formed the basis for the award of any Degree/ Diploma/ Associateship/ Fellowship or similar title to any candidature of any other university.


Signature of the Supervisor


Signature of the Candidate

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-Akhila.C

List of Abbreviations and Acronyms

%	Percentage	HN	Human Nails
°C	Degree Celsius	HPLC	High Performance Liquid Chromatography
AFM	Atomic Force Microscope	HPLC/MS	High Performance Liquid Chromatography/Mass Spectrum
AMR	Antimicrobial Resistance	IC ₅₀	Half minimal inhibitory concentration
AR	Analytical grade	INR	Indian Rupee
BC	Bacterial cellulose	IR	Infrared
BSA	Bovine serum albumin	KCal	Kilocalories
CA	Chromosomal aberrations	kV	Kilovolt
CE/MS	Capillary Zone Electrophoresis/Mass Spectra	LED	Light Emitting Diode
cm	Centimetre	LOD	Limit of Detection
CN ⁻	Cyanide anion	LOQ	Limit of Quantitation
CND	<i>Cynodon dactylon</i>	LSPR	Localized Surface Plasmon Resonance
CNTs	Carbon Nanotubes	m	Meter
CPE	Carbon Paste Electrode	M	Molar
CT	Computed Tomography	MIC	Minimum Inhibitory Concentration
ct-DNA	calf thymus DNA	min	Minutes
DNA	Deoxyribonucleic acid	mL	Milliliter
ds-DNA	double stranded DNA	MLC	Micellar Liquid Chromatography
EDS	Energy Dispersive X-ray Spectroscopy	mm	Millimetre
FDA	Food and Drug Administration	mM	Millimole
FE-SEM	Field Emission Scanning Electron Microscope	MRI	Magnetic Resonance Imaging
FT-IR	Fourier Transform Infrared Spectroscopy	mV	Millivolt
FWHM	Full Width Half Maximum	nM	Nanomole
g	Gram	nm	Nanometre
GC	<i>Garcinia cambogia</i>	NPs	Nanoparticles
GCE	Glassy Carbon Electrode	NRs	Nanorods
GNPs	Gold Nanoparticles	NTU	Nephelometric Turbidity Units
GO	Graphene Oxide	NWs	Nanowires
GRAS	Generally Recognized as Safe	OD	Optical Density
h	Hour	OSHA	Occupational Safety and Health Administration
HCA	Hydroxy Citric acid	PET	Positron Emission Tomography
HCN	Hydrogen Cyanide	ppb	parts per billion
M/NEM	Micro-/Nano Electro Mechanical	PPD	Persistent Pigment Darkening
MBC	Minimum Bactericidal Concentration	ppm	Parts per million

MDRB	Multi Drug Resistant Bacteria	RF	Radio Frequency
mg	Milligram	TB	<i>Terminalia bellerica</i>
RGO	Reduced Graphene Oxide	TDI	Tolerated Daily Intake
RNA	Ribonucleic acid	TEM	Transmission Electron Microscope
RT	Room Temperature	TGA	Thermogravimetric Analysis
RWW	Rice washed water	TLC	Thin Layer Chromatography
s	Seconds	TMDC	Transition metal dichalcogenide
SERS	Surface Enhanced Raman Scattering	UV	Ultra violet
SNPs	Silver nanoparticles	WE	Working Electrode
So	Sonication	WHO	World Health Organization
SPF	Sun Protection Factor	XRD	X-ray Diffraction
ss-DNA	Single Stranded DNA	ZnONPs	Zinc oxide Nanoparticles
Su	Sunlight	ZOI	Zone of Inhibition
μL	Microliter	θ	Theta
μm	Micrometre	λ_{max}	Wavelength of maximum absorbance

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