

List of Abbreviations

Sr. No.	Chapter Title
1	Introduction, Aims and Objectives
ELISA	Enzyme-linked immunosorbent assay
PCR	Polymerase chain reaction
<i>E. Coli</i>	<i>Escherichia coli</i>
PANI	Polyaniline
Pt	Platinum
miR-137	microRNA-137
SNAP-25-GFP	Syanptosomal associated protein 25-Green fluorescent protein
DNA	Deoxyribose nucleic acid
AD	Alzheimer's disease
fM	Femtomolar
LOD	Limit of detection
BoNTs	Botulinum neurotoxins
FRET	Fluorescence resonance energy transfer
BoNT-LcA	Light chain of botulinum neurotoxin
fg	Femtogram
GOx	Glucose oxidase
HRP	Horseradish peroxidase
J-chian	Joining protein
ssDNA	Single stranded deoxyribose nucleic acid
RNA	Ribose nucleic acid
GCE	Glassy carbon electrode
AuNP	Gold nanoparticle
AChE	Acetylcholine esterase enzyme
GO	Graphene oxide
SARS-CoV-2	Severe acute respiratory syndrome coronavirus 2
BSA	Bovine serum albumin
SPR	Surface plasma resonance

PMT	Photomultiplier tube
BW	Bulk wave
SAW	Surface acoustic wave
MEMS	Microelectromechanical systems
ET	Enzyme thermistor
CFU	Colony forming unit
UCNPs	Upconversion nanoparticles
LSPR	Plasmon resonance
FRET	Forster resonance energy transfer
NSET	Nanomaterial surface enhancement transfer
SERS	Surface enhanced Raman scattering
MNPs	Magnetic nanoparticles
CNTs	Carbon nanotubes
SWCNTs	Single walled carbon nanotubes
MWCNTs	Multiwalled carbon nanotubes
CDs	Carbon dots
GQDs	Graphene quantum dots
QDs	Quantum dots
NIR	Near infrared region
SiNPs	Silica nanoparticles
PVD	Physical vapor deposition
CVD	Chemical vapor deposition
rGO	Reduced graphene oxide
PVA	Polyvinyl alcohol
PEI	Polyethyleneimine
Nsp3	Nonstructural protein
AChE	Acetylcholine esterase enzyme
ATChI	Acetylthiocholine iodide
SDS	Sodium dodecyl sulphate
NaOH	Sodium hydroxide
SPE	Screen printed electrode

cDNA	Complementary deoxyribose nucleic acid
RT-PCR	Reverse transcriptase polymerase chain reaction
qPCR	Quantitative polymerase chain reaction

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TLC	Thin layer chromatography
GC	Gas chromatography
HPLC	High performance liquid chromatography
LC/GC–MS	Liquid chromatography/Gas chromatography-Mass spectroscopy
OPH	Organophosphorus hydrolase
DMF	Dimethyl formamide
PBS	Phosphate buffer solution
KCl	Potassium chloride
CV	Cyclic voltammetry
SEM	Scanning electron microscopy
AFM	Atomic force microscopy
ATChI	Acetylthiocholine iodide
AChE	Acetylcholine esterase enzyme
OPP	Organophosphorus pesticides
nM	Nanomolar
SD	Standard deviation
PAM	Pralidoxime
K ₃ [Fe(CN) ₆]	Potassium ferricyanide

3 Design and Characterization of conductive Nano-PEI-lipase film for efficient electrochemical detection of triglycerides

TGA	Triglycerides
ATP	Adenosine triphosphate
ADP	Adenosine triphosphate
H ₂ O ₂	Hydrogen peroxide
Ag/AgCl	Silver/Silver chloride

NPG	Nonporous gold composite
NNO	Nortropine-N-oxyl
TiO ₂	Titanium dioxide
GA	Glutaraldehyde
Ipc	Cathodic peak current
Ipa	Anodic peak current
GO	Graphene oxide

4 Molecular imprinting of *Staphylococcus aureus* in polyacrylamide gel slab for detecting the presence of the bacteria as a contaminant

Na ₂ HPO ₄	Disodium hydrogen phosphate
NaH ₂ PO ₄	Sodium dihydrogen phosphate
APS	Ammonium persulfate
TEMED	N,N,N',N'-tetramethylethane-1,2-diamine
LB	Luria broth
LA	Luria Agar
SDS PAGE	Sodium dodecyl-sulfate polyacrylamide gel electrophoresis
PAM	Polyacrylamide
DSC	Differential scanning calorimetry

5 Electrochemical biosensor for cyclic voltammetric detection of SARS-CoV-2 using DNA-Chip

WHO	World Health Organization
POC	Point-of-care
PBASE	1-pyrene butyric acid N-hydroxysuccinimide ester
ORF1ab gene	Open reading frame 1ab gene
RdRP gene	RNA dependent RNA polymerase gene
E gene	Envelope protein gene
N gene	Nucleocapsid protein gene
S gene	Spike protein gene
Nsp1-16	16 non-structural proteins
Nsp3	Non-structural protein-3

HCl	Hydrochloric acid
MB	Methylene blue
TE buffer	Tris-EDTA buffer
HNO ₃	Nitric acid
H ₂ SO ₄	Sulfuric acid
MWCNTs-COOH	Carboxylic acid functionalized carbon nanotubes
MQ water	Milli-Q water
NaCl	Sodium Chloride
PupE gene	Prokaryotic ubiquitin like protein E gene
bp	Base pair
MAB	Monoclonal antibodies