

# Supporting Information

## Supramolecular Chemistry for Optical Detection and Delivery Applications in Living Plants

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### List of common abbreviations

2,4-D	2,4-dichlorophenoxy acetic acid	CB $n$	Cucurbit[ $n$ ]uril
2-HP- $\beta$ CD	(2-hydroxypropyl)- $\beta$ CD	CBZ	Carbendazim
2-MBQ	2-mercaptobenzoquinone	CDots	Carbon dots
2-MHQ	2-mercaptohydroquinone	CDs	Cyclodextrins
Å	Angstrom	CHEF	Chelation-enhanced fluorescence
ABA	Abscisic acid	CMV	Cucumber mosaic virus
Abm	abamectin/abamectin	CNTs	carbon nanotubes
AD	1-adamantanamine	CoPhMoRe	Corona phase molecular recognition
AgNPs	Silver nanoparticles	CQ	Chlormequat
AIEgen	Aggregation-induced emitting fluorophore	CRISPR	Clustered regularly interspaced short palindromic repeats
AIETPA	aggregation-induced emission-enhancing organic molecules	CuAAC	Copper-catalysed azide-alkyne cycloaddition
ALB	Albumin	CX $n$	Calix[ $n$ ]arene
AN	(4'-hydroxy-10-methylpyranoflavylum	Cy7	Cyanine 7
AuNPs	Gold nanoparticles	Cys	Cysteine
AVM	Avermectin	DCPA	Tetrachloroetherphthalate
BA	Boronic acid	DD	Dodine
BSA	Bovine serum albumin	DDT	1,1'-(2,2,2-trichloroethane-1,1-diyl)bis(4-chlorobenzene)
C7	Coumarin 7	DFQ	Difenzoquat
Cas9	CRISPR associated protein 9	DLS	Dynamic light scattering

DMSO	Dimethyl sulfoxide	$IC_{50}$	Half-maximal inhibitory concentration
DNA	Deoxyribonucleic acid	ICT	Intramolecular charge transfer
DPU	Diphenyl urea	IMZ	Imazilil
DPV	Differential pulse voltammetry	IR	Infrared
DQ	Diquat	IVN	Ivermectin
dsDNA	double-stranded DNA	$K_a$	Binding association constant
dsRNA	Double-stranded RNA	kJ	Kilojoule
DTT	Dithiothreitol	LDA	Linear discriminant analysis
EC50	Half maximal effective concentration	LDH	Layered double hydroxide
EFSA	European Food Safety Authority	LoD	Limit of detection
ELISA	Enzyme linked Immunosorbent assay	LoQ	Limit of quantification
$E_{ox}$	electrochemical oxidation potential	MES	(2-(N-morpholino)ethanesulfonic acid)
EPA	United States Environmental Protection Agency	miRNA	microRNA
EtOH	Ethanol	MOF	Metal-organic framework
FAM	Fluorescein	MOPS	(3-(N-morpholino)propanesulfonic acid)
FBZ	Fuberidazole	mPEG	monomethyl ether PEG
FDA	U.S. Food and Drug Administration	MQ	Mepiquat
FPN	Fipronil	mRNA	Messenger RNA
FRET	Förster resonance energy transfer	MS	Mass spectrometry
FWHM	Full width at half maximum	MSPs	Mesoporous silica particles
GAs	Gibberellins	MV2+	Methyl viologen
genFPs	Fluorescent proteins	NAA	1-naphthalene acetic acid
GFP	Green fluorescent protein	Nb	Nicotiana benthamiana
GRAS	Generally recognized as safe	NIR	Near-infrared
GSH	Glutathione	Nluc	NanoLuc <sup>TM</sup> luciferase
H <sub>2</sub> L	4,4'-(propane-2,2-diyl)bis(2-(((2-morpholinoethyl)imino)methyl)phenol)	NPs	Nanoparticles
Hcy	Homocysteine	PAH	poly(allylamine) hydrochloride
HMS	Hollow mesoporous silica nanoparticles	PA <sub><i>n</i></sub>	Pillar[ <i>n</i> ]arene
HPLC	High-performance liquid chromatography	PB	Phosphate buffer
<i>I</i>	Intensity	PBS	Phosphate-buffered saline
		PCR	Polymerase chain reaction

pDNA	Plasmid DNA	TA	Thioglycolic acid
PEG	Polyethylene glycole	TBZ	Thiabendazole
PEI	Polyethylenimine	TCZ	Tricyclazole
PFAS	Per- and polyfluoroalkyl substances	TDZ	Thidiazuron
PFOA	Perfluorooctanoic acid	TEM	Transmission electron microscopy
PFOS	Perfluorooctane sulfonic acid	TES	2-{{1,3-Dihydroxy-2-(hydroxymethyl)propan-2-yl}amino}ethane-1-sulfonic acid
$pK_a$	Acid dissociation constant	TMAPS	N-trimethoxysilylpropyl-N,N,N-trimethylammonium chloride
PLQY	Photoluminescence quantum yield	TMGMV	Tobacco mild green mosaic virus
PMMoV	Pepper mild mottle virus	Tris	Tris(hydroxymethyl)aminomethane
PQ	Paraquat	Try	Trypsin
Psa	Pseudomonas syringae pv. Actinidiae	UV	Ultra-violet
PVA	Polyvinyl alcoho	VOC	Volatile organic compounds
PVNs	Plant-derived virus-like nanoparticles	WHO	World Health Organization
QDs	Quantum dots	WT	Wild-type
RbcS	Rubisco small subunit 1A	Xac	Xanthomonas axonopodis pv. Citri
RCNMV	Red clover necrotic mosaic virus	Xoo	Xanthomonas oryzae pv. Oryzae
RFD	Reference dose	$\Delta G$	Gibs free energy
Rh6G	Rhodamine 6G	$\Delta H$	Free enthalpy
RNA	Ribonucleic acid	$\Delta S$	Free entropy
RNAi	RNA interference	$\lambda_{em}$	Emission wavelength
ROS	Reactive oxygen species	$\lambda_{ex}$	Excitation wavelength
SA	Salicylic acid		
SC $n$	p-sulfonato CX $n$		
SERDS	Surface-enhanced Raman difference spectroscopy		
SERS	Surface-enhanced Raman spectroscopy		
siRNA	Small interfering RNA		
Spd	Spermidine		
SWCNTs	Single-walled carbon nanotubes		
$T$	Temperature		