

Supplementary Material

Green Synthesis of Transition-Metal Nanoparticles and Their Oxides: A Review

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Table S1. The Subclasses of Terpenoids.

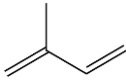
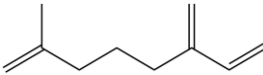
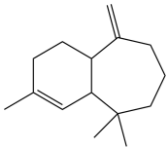
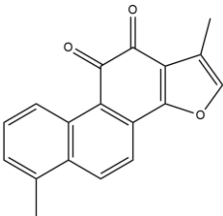
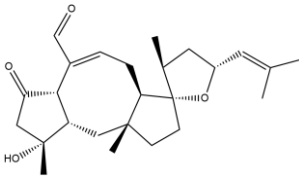
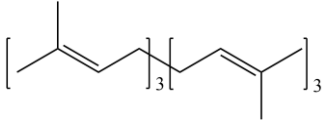
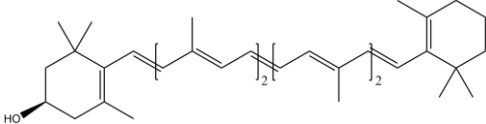
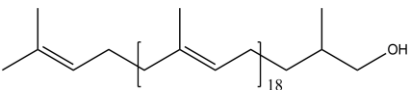
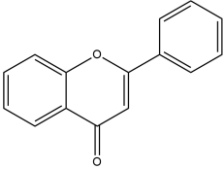
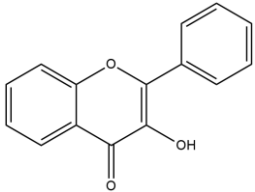
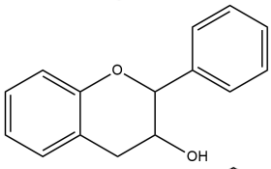
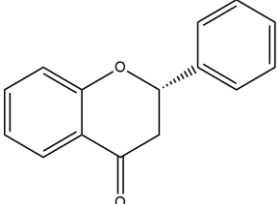
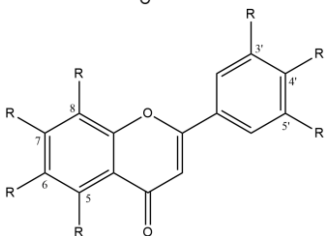
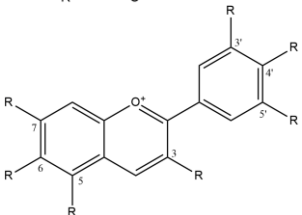
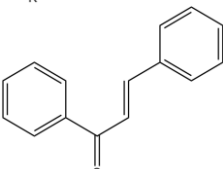
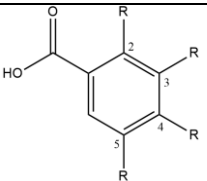
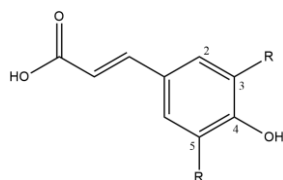
Class	Example Name	Structure	No. of Iso- prene Units	General Formula
Hemiterpenoids	Isoprene		1	C ₅ H ₈
Monoterpenoids	Myrcene		2	C ₁₀ H ₁₆
Sesquiterpenoids	α -Himachalene		3	C ₁₅ H ₂₄
Diterpenoids	Tanshinone		4	C ₂₀ H ₃₂
Sesterterpenoids	Ophiobolin A		5	C ₂₅ H ₄₀
Triterpenoids	Squalene		6	C ₃₀ H ₄₈
Tetraterpenoids	Cryptoxanthin		8	C ₄₀ H ₆₄
Polyterpenoids	Dolichol		>8	(C ₅ H ₈) _n

Table S2. The Subclasses of Phenolics.

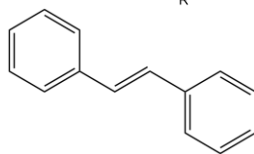
Class	Structure	General Formula
Flavonoids		
Flavones		$C_{15}H_{10}O_2$
Flavonols		$C_{15}H_{10}O_3$
Flavan-3-ols		$C_{15}H_{14}O_2$
Flavanones		$C_{15}H_{12}O_2$
Isoflavones		$C_{15}H_{10}O_2$
Anthocyanins		$C_{15}H_{11}O^+$
Chalcones		$C_{15}H_{12}O$
Non-Flavonoids		
Hydroxybenzoic Acids		$C_7H_6O_3$

Hydroxycinnamic
Acids



$C_9H_8O_3$

Stilbenes



$C_{14}H_{12}$

Table S3. The Subclasses of Alkaloids.

Precursor	Structure	Alkaloid Class
Tryptophan		Indole, Terpenoid indole, Quinoline, Pyrroloindole, and Ergot
Phenylalanine		-
Ornithine		Pyrrolidine, Tropane, and Pyrrolizidine
Tyrosine		Phenylethylamino- and Isoquinoline
Anthranilic Acid		Quinazoline, Quinoline, and Acridine
Histidine		Imidazole
Nicotinic Acid		Pyridine

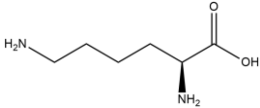
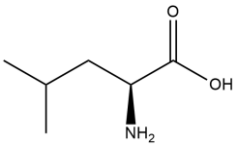
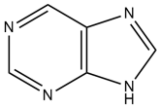
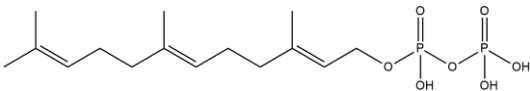
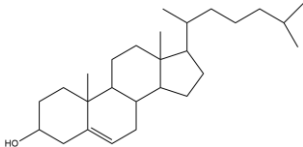
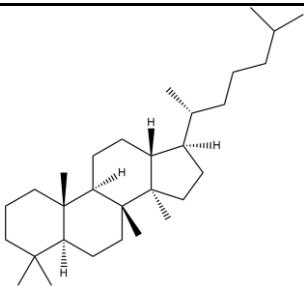
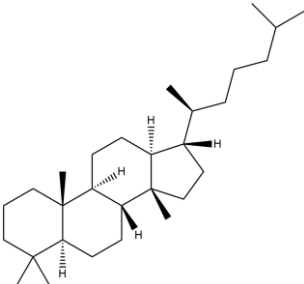
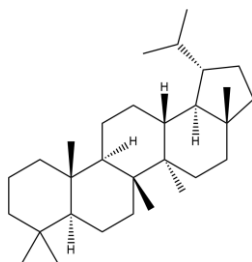
Lysine		Piperidine, Quinolizidine, Indolizidine
Leucine		Pyrrole
Purine		-
Geranylgeranyl-diphosphate		Terpenoidic
Cholesterol		Steroidal

Table S4. The Subclasses of Saponins.

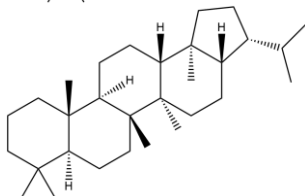
Class	Structure	General Formula
Dammaranes		C ₃₀ H ₅₄
Tirucallanes		C ₃₀ H ₅₄

Lupanes



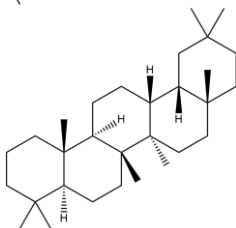
C₃₀H₅₂

Hopanes



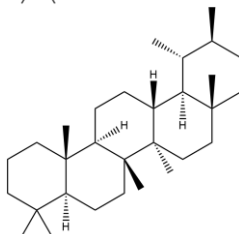
C₃₀H₅₂

Oleananes



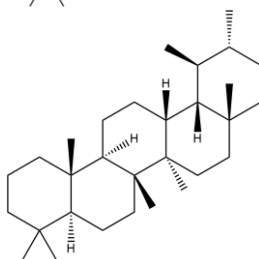
C₃₀H₅₂

Taraxastanes



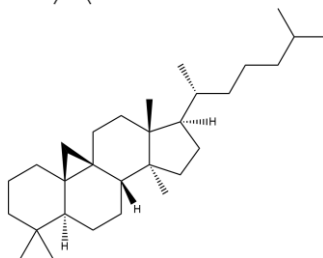
C₃₀H₅₂

Ursanes



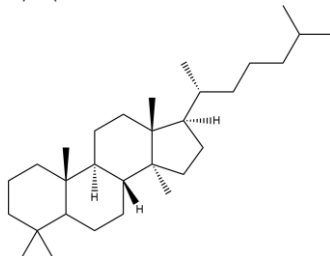
C₃₀H₅₂

Cycloartanes



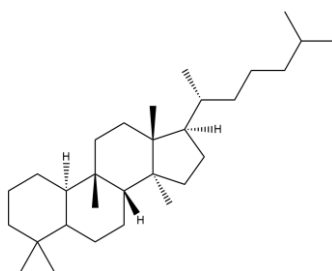
C₃₀H₅₂

Lanostanes

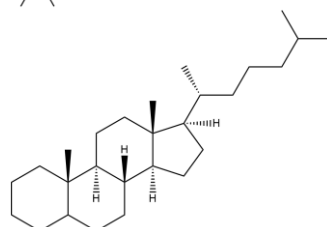


C₃₀H₅₄

Cucurbitanes

 $C_{30}H_{54}$

Steroids

 $C_{27}H_{48}$ **Table S5.** The Subclasses of Carbohydrates.

Class	Name	Structure	Formula
Monosaccharides	Glucose		$C_6H_{12}O_6$
Oligosaccharides	Raffinose		$C_{18}H_{32}O_{16}$
Polysaccharides	Amylose Starch		$(C_6H_{10}O_5)_{300-600}$

Table S6. The Plant-mediated synthesis of Titanium Dioxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Acacia senegal</i>	TiO ₂	9	Spherical	XRD, FTIR, Raman, SEM-EDX, TEM, HR-TEM and UV	Organic dye removal	(Saranya et al., 2018a)
<i>Acanthopyllum laxiusculum</i>	TiO ₂	20–25	Spherical	XRD, FTIR, EDAX and TEM	-	(Madadi & Lotfabad, 2016)
<i>Ageratina altissima</i>	TiO ₂	60–100	Spherical	XRD, FTIR and FSEM	Photocatalytic activity	(Ganesan et al., 2016)
<i>Allium cepa</i>	TiO ₂	89–96	-	AFM, SEM, TEM, XRD, UV and FTIR	Antimicrobial activity	(Abdul jalill, 2018)
<i>Aloe vera</i>	TiO ₂	30	Irregular	SEM, TEM, XRD, UV and FTIR	-	(Khadar et al., 2016)
<i>Alpinia calcarata</i>	TiO ₂	60–130	Spherical	UV, FTIR and SEM	Anti-inflammatory & Antibacterial activity	(Pratheema, 2018)
<i>Amylum</i>	TiO ₂	9	Spherical	XRD, SEM, BET and NAA	Photocatalytic activity	(Muniandy et al., 2017)
<i>Anisomeles malabarica</i>	TiO ₂	18	-	XRD	-	(P. Saravanan et al., 2016)
<i>Annona squamosa</i>	TiO ₂	23	Spherical	XRD, TEM, SEM and EDS	-	(S. Roopan et al., 2012)
<i>Arnicae anthodium</i>	TiO ₂	30	-	UV, TXRF, FTIR, XRD and SEM-EDS	-	(R Dobrucka, 2017)
<i>Azadirachta indica</i>	TiO ₂	15–50	Spherical	SEM, TEM, FTIR and XRD	Antibacterial activity	(Thakur et al., 2019)
<i>Calotropis gigantea</i>	TiO ₂	10	Spherical	SEM, EDX and XRD	Acaricidal activity	(Marimuthu et al., 2013)
<i>Capsicum annum</i>	TiO ₂	90–104	-	AFM, SEM, TEM, XRD, UV and FTIR	Antimicrobial activity	(Abdul jalill, 2018)
<i>Cassia fistula</i>	TiO ₂	-	Spherical	UV, FTIR, XRD, SEM, EDAX and TGA	Antibacterial activity	(Swathi et al., 2014)
<i>Catharanthus roseus</i>	TiO ₂	65	Irregular	XRD, FTIR, SEM and AFM	Antiparasitic activity	(Velayutham et al., 2012)
<i>Cicer arietinum</i>	TiO ₂	14	Spherical	TEM, XRD, UV and TGA	Lithium ion batteries	(Kashale et al., 2016)
<i>Cinnamomum tamala</i>	TiO ₂	23	Irregular	XRD, FTIR, DLS, TEM, SAED and EDX	Cytotoxicity against D145 cells	(He et al., 2017)
<i>Citrus limon</i>	TiO ₂	-	-	FTIR, SEM and EDAX	Antibacterial activity	(Farook et al., 2017)
<i>Citrus sinensis</i>	TiO ₂	19	Tetragonal	TEM, XRD, TGA and PSA	-	(Rao et al., 2015)
<i>Cochlospermum gossypium</i>	TiO ₂	8–13	Spherical	XRD, FTIR, SEM-EDX, TEM, HR-TEM, UV and BET	Photocatalytic degradation of organic dye	(Saranya et al., 2011)
<i>Curcuma longa</i>	TiO ₂	23–44	Spherical	AFM, UV, XRD and SEM	Antifungal & Anti-pathogenic activity	(Abdul Jalill et al., 2016)
<i>Cymbopogon citratus</i>	Fe-TiO ₂	7–26	Irregular	SEM-EDS, XRD, UV and TEM	Photocatalytic activity in wastewater	(Solano et al., 2019)
<i>Cynodon dactylon</i>	TiO ₂	13–34	Irregular	XRD, FTIR, Raman and SEM	Antibacterial & Anticancer activity	(Hariharan et al., 2017)
<i>Echinacea purpurea</i>	TiO ₂	120	Spherical	UV, SEM, TXRF and FTIR	-	(Renata Dobrucka, 2017)
<i>Eclipta prostrata</i>	TiO ₂	50	Spherical	FTIR, XRD, AFM and FESEM	-	(Rajakumar et al., 2012)
<i>Euphorbia prostrata</i>	TiO ₂	84	Spherical	SAED, TEM and XRD	Cell death in Leishmania donovani	(Zahir et al., 2015)
<i>Euphorbia thymifolia</i>	Pd-TiO ₂	19–29	-	FESEM, EDS, TEM and	Dye degradation	(Maham,

				XRD		Nasrollahzadeh, et al., 2017)
<i>Glycosmis cochinchinensis</i>	TiO ₂	40	Spherical	UV, FTIR, SEM-EDS and TEM	Photocatalytic & Antimicrobial activity	(Rosi & Kalyanasundaram, 2018)
<i>Hibiscus rosa-sinensis</i>	TiO ₂	-	Polydispersed	XRD, SEM and FTIR	Antibacterial activity	(Sahaya et al., 2014)
<i>Jatropha curcas</i>	TiO ₂	13	Spherical	UV, FESEM, EDS, FTIR, XRD, DLS, BET and BJH	Photocatalytic degradation of tannery wastewater	(Goutam et al., 2018)
<i>Lagenaria siceraria</i>	TiO ₂	7	Spherical	FTIR, SEM, EDAX, TEM and XRD	Antimicrobial activity & Free radical scavenging activity	(Kalyanasundaram & Prakash, 2015)
<i>Momordica charantia</i>	TiO ₂	70	Irregular/Spherical	UV, XRD, FTIR, HRTEM, EDX, DLS and Zeta-potential	Antimalarial activity	(Gandhi et al., 2018)
<i>Morinda citrifolia</i>	TiO ₂	15–19	Spherical	EDAX, FTIR, SEM and XRD	Antimicrobial activity	(Sundrarajan et al., 2017)
<i>Moringa Oleifera</i>	TiO ₂	100	Spherical	UV and SEM	Wound-healing activity	(Sivaranjani & Philominathan, 2016)
<i>Nerium Oleander</i>	TiO ₂	7	Spherical	FTIR, FESEM, EDX, XRD and UV	Photocatalytic activity	(Deshmukh et al., 2018)
<i>Nyctanthes arbor-tristis</i>	TiO ₂	100–150	Spherical	XRD, PSA and SEM	-	(Sundrarajan & Gowri, 2011)
<i>Ocimum basilicum</i>	TiO ₂	32	Irregular/Spherical	XRD, PSA, SEM and FTIR	-	(Alapati & Kantheti, 2018)
<i>Peltophorum pterocarpum</i>	TiO ₂	20–80	-	XRD, HR-TEM and XANES	-	(S. Saravanan et al., 2016)
<i>Phyllanthus niruri</i>	TiO ₂	32	Spherical	XRD, FTIR, TEM and UV	Photocatalytic activity	(Shanavas et al., 2019)
<i>Piper betle</i>	TiO ₂	7	Spherical	FTIR, UV, XRD and SEM	Antibacterial activity	(Hunagund et al., 2016)
<i>Pithecellobium dulce</i>	TiO ₂	6	Spherical	FTIR, SEM, EDAX, TEM and XRD	Antimicrobial activity & Free radical scavenging activity	(Kalyanasundaram & Prakash, 2015)
<i>Psidium guajava</i>	TiO ₂	33	Spherical	XRD, FTIR, FESEM and EDX	Antibacterial & Antioxidant activity	(Santhoshkumar et al., 2014)
<i>Punica granatum</i>	TiO ₂	75–90	-	SEM and FTIR	Pharmaceuticals	(Dubey & Singh, 2019)
<i>Senna auriculata</i>	TiO ₂	38	Spherical	UV, FTIR, FSEM and XRD	-	(Valli & Geetha, 2015)
<i>Sesbania grandiflora</i>	TiO ₂	43–56	Triangular, Cubic and Spherical	FTIR, SEM-EDX, UV and XRD	Toxicity in zebrafish embryos	(Srinivasan et al., 2019)
<i>Solanum trilobatum</i>	TiO ₂	-	-	-	Toxic activity	(Vadlapudi & Behara, 2012)
<i>Taraxacum officinale</i>	TiO ₂	-	Rod	XRD, SEM and TEM	Photocatalytic activity	(Bao et al., 2012)
<i>Trigonella foenum-graecum</i>	TiO ₂	20–90	Spherical	FTIR, UV, XRD, HR-TEM and HR-SEM	Antimicrobial activity	(Subhapriya & Gomathipriya, 2018)
<i>Vigna radiata</i>	TiO ₂	-	Oval	FTIR and SEM	Anti-bacterial activity	(Chatterjee et al., 2016)
<i>Vigna unguiculata</i>	TiO ₂	-	Oval	FTIR and SEM	Antimicrobial & Cytotoxic Effects	(Chatterjee et al., 2017)

Table S7. The Plant-Mediated Synthesis of Iron & Iron Oxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Abelmoschus esculentus</i>	Fe	24–34	Spherical	XRD, UV, FTIR, FESEM and TEM	Antibacterial activity	(Pande et al., 2015)
<i>Acacia nilotica</i>	Fe	229	Irregular	FTIR, UV, DLS, TEM, SEM, EDS and XRD	Catalytic, adsorption and antibacterial activity	(Da'na et al., 2018)
<i>Ailanthus excelsa</i>	α -Fe ₂ O ₃	40	Spherical	FTIR, XRD, SEM and UV	Mortality efficacy on green peach Aphid	(Asoufi et al., 2018)
<i>Albizia lebbeck</i>	Fe	-	-	XRD and FTIR	Dye degradation	(Bharadwaj et al., 2016)
<i>Amaranthus dubius</i>	Fe	43–200	Spherical	UV, FTIR, SEM, XRD, PSD and Zeta potential	Photocatalytic activity	(Harshiny et al., 2015)
<i>Apium graveolens</i>	Fe ₂ O ₃	20–99	Irregular, Cubic and Hexagonal	XRD, FESEM and UV	Antibacterial activity	(Aziz & Urabe, 2019)
<i>Artemisia vulgaris</i>	Fe ₃ O ₄	30	Spherical	TEM, PSA, XRD, FTIR, VSM and TGA	Dye degradation	(Beheshtkhoo et al., 2018)
<i>Artocarpus altilis</i>	Fe ₂ O ₃	36–44	Spherical	UV, FTIR and SEM	Antibacterial, biofilm inhibition and dye degradation activities	(Kanchana & Zantye, 2018)
<i>Avicennia marina</i>	FeO	30–100	Cubic	UV, FTIR, SEM, AFM and XRD	Dye degradation	(Karpagavinayagam & Vedhi, 2019)
<i>Azadirachta indica</i>	Fe	98-500	Spherical	SEM, EDS, UV and FTIR	Antibacterial activity	(Devatha et al., 2018)
<i>Camellia sinensis</i>	Fe ₂ O ₃	23–43	Irregular, Cubic and Hexagonal	XRD, FESEM and UV	Antibacterial activity	(Aziz & Urabe, 2019)
<i>Caricaya papaya</i>	Fe ₃ O ₄	33	Capsule-like	FTIR, UV, XRD, SEM and EDS	-	(Latha & Gowri, 2014)
<i>Carum carvi</i>	Fe ₂ O ₃	300	Spherical	UV, XRD, and SEM	Anti-cancer drug adsorption	(Izadi et al., 2018)
<i>Centella asiatica</i>	Fe ₂ O ₃	10–50	Spherical	FTIR, XRD, EDX, VSM, SEM and TEM	Acute oral toxicity studies	(Pravallika et al., 2019)
<i>Ceratonia siliqua</i>	Fe ₂ O ₃	7	Spherical	TEM, SEM, EDX, XRD, BET, FESEM and Raman	AMX degradation	(Demirezen, Yıldız & Yilmaz, 2019)
<i>Citrus maxima</i>	Fe	10–100	Irregular	TEM, EDS, XPS, FTIR, DLS and Zeta potential	-	(Wei et al., 2016)
<i>Citrus reticulum</i>	α -Fe ₂ O ₃	20–63	Spherical	UV, TGA, XRD, FTIR, SEM and TEM	Dye degradation	(H. R. Ali et al., 2017)
<i>Coffea arabica</i>	Fe	50–100	Spherical	UV, XRD and SEM	-	(Pattanayak & Nayak, 2012)
<i>Couroupita guianensis</i>	Fe ₃ O ₄	17	Spherical and Poly-dispersed	UV, FTIR, XPS, DLS, XRD, AFM, HRTEM, VSM and Zeta potential	Cytotoxicity and antibacterial activity	(Sathishkumar et al., 2018)
<i>Curcuma longa</i>	Fe ₃ O ₄	338.2–488.1	Cubic	UV, SEM-EDX, XRD and FTIR	Wastewater treatment	(Herlekar et al., 2015)
<i>Cydonia oblonga</i> Miller	99mTc-labeled-Fe ₃ O ₄	50	Spherical	FESEM, DLS, XRD, VSM and FTIR	Evaluation of their cytotoxicity and bio-distribution in rats	(Rahmani et al., 2019)
<i>Daphne mezereum</i>	Fe ₂ O ₃	9.2	Spherical	TEM, PSA, FTIR, XRD, VSM	Dye degradation	(Beheshtkhoo et al., 2018)
<i>Datura inoxia</i>	Fe ₃ O ₄	7–14	Spherical	UV, FTIR, XRD and TEM	-	(Das et al., 2014)
<i>Dodonaea viscosa</i>	Fe	27	Spherical	UV, XRD, AFM and HRTEM	Antibacterial activity	(S. C.G. Kiruba Daniel et al., 2013)
<i>Emblica officinalis</i>	Fe	22.6	Spherical	FTIR, XRD, UV, SEM and TEM	Remediation of lead-contaminated	(Kumar et al., 2015)

water						
<i>Eriobotrya japonica</i>	Fe ₃ O ₄	100	Irregular	DLS, XRD, FTIR and SEM/EDX	Heterogeneous Fenton-like catalyst for the degradation of Basic Red 46	(Önal et al., 2017)
<i>Eucalyptus</i>	Fe	20–80	Spherical	SEM, EDS, XRD and FTIR	Treatment of eutrophic wastewater	(T. Wang et al., 2014)
<i>Ficus carica</i>	Fe ₂ O ₃	9	Spherical	EDX, TEM, UV, FTIR and DLS	-	(Demirezen, Yıldız, Yılmaz, et al., 2019)
<i>Gardenia jasminoides</i>	Fe	32	Hexagonal	TGA, FTIR, TEM, SEM, AFM and XRD	Antibacterial activity	(Naseem & Farrukh, 2015)
<i>Gardenia resinifera</i>	α-Fe ₂ O ₃	5	Spherical	XRD, EDS and TEM	Hyperthermia	(Karade et al., 2019)
<i>Glycine max</i>	Fe ₃ O ₄	8	Spherical	XPS, FTIR, SEM, TEM, SAED and XRD	-	(Cai et al., 2010)
<i>Glycosmis mauritiana</i>	Fe ₂ O ₃	58–79	Spherical	UV, DLS, XRD, FTIR, SEM and TEM	Antibacterial activity	(Amutha & Sridhar, 2015)
<i>Hordeum vulgare</i>	Fe ₃ O ₄	30	-	TEM, SAED, EELS, XPS and DLS	-	(Makarov et al., 2014)
<i>Hydrangea paniculata</i>	Fe ₂ O ₃	56	Spherical	XRD, FTIR, SEM and TEM	Enhancement of Flax plant	(Karunakaran et al., 2017)
<i>Kappaphycus alvarezii</i>	Fe ₂ O ₃	10–30	Spherical	XRD, EDX and FTIR	Photocatalytic and Antibacterial activity	(Arularasu et al., 2018)
<i>Lagenaria siceraria</i>	Fe ₃ O ₄	30–100	Cubic	UV, SEM, EDX, Zeta sizer and FTIR	Antimicrobial activity	(Kanagasubbulakshmi & Kadirvelu, 2017)
<i>Lawsonia inermis</i>	Fe ₂ O ₃	150–200	Spherical	UV, FTIR, SEM and EDX	Antibacterial activity	(Chauhan & Upadhyay, 2019)
<i>Luma apiculata</i>	Fe _x O _y	7.5-13.5	Irregular	UV, FTIR, DLS, Zeta potential, SEM-EDX and Raman	Photocatalytic activity	(Salgado et al., 2019)
<i>Magnolia champaca</i>	Fe	96–110	Spherical	UV, SEM, EDX and FTIR	Wastewater treatment	(Devatha et al., 2016)
<i>Mangifera indica</i>	Fe	100–150	Spherical	UV, SEM, EDX and FTIR	Wastewater treatment	(Devatha et al., 2016)
<i>Mansoa alliacea</i>	β-Fe ₂ O ₃	18.22	Hexagonal	XRD, FTIR, UV and TGA	-	(Prasad, 2016)
<i>Melaleuca nesophila</i>	Fe	40–60	Spherical	SEM, EDS, XRD and FTIR	Dye degradation	(Z. Wang et al., 2014)
<i>Mimosa pudica</i>	Fe ₂ O ₃	67	Spherical	UV, FTIR, XRD, SEM, PDA and VSM	-	(Niraimathee et al., 2016)
<i>Moringa oleifera</i>	Fe	3.4–7.4	Spherical	UV, XRD, FTIR, TEM	Removal of Nitrate from water and antibacterial activity	(Katata-Seru et al., 2018)
<i>Murraya koenigii</i>	Fe	-	-	UV, SEM, EDX and FTIR	Antibacterial activity	(Subha et al., 2017)
<i>Musa acuminata</i>	Fe ₃ O ₄	72	Spherical	XRD, FTIR, TEM, UV and PSA	-	(Kale, Barwar, Kane & Bhatt, 2018)
<i>Musa ornata</i>	Fe	43.69	-	UV, FTIR, XRD, AFM and PSA	Antibacterial activity	(Saranya et al., 2017)
<i>Myrtus communis</i>	Fe	40–60	Spherical	UV, FTIR, XRD, SEM and TEM	Reducing excessive iron in mice	(Eslami et al., 2018)
<i>Nephelium lappaceum</i>	Fe ₃ O ₄	200	Spinel	XRD, Raman, FTIR and TEM	-	(Yuvakkumar & Hong, 2014)
<i>Nephrolepis auriculata</i>	Fe	40–70	Spherical	TEM, XRD, EDS, XPS and FTIR	Cr(IV) removal	(Yi et al., 2019)
<i>Ocimum sanctum</i>	Fe ₂ O ₃	20	Irregular	FTIR, XRD, SEM and TEM	Microscopic studies	(Balamurugan et al., 2014)
<i>Oolong tea</i>	Fe	40–50	Spherical	SEM, UV, BET, EDS and XRD	Degradation of malachite green dye	(Huang et al., 2014)
<i>Passiflora foetida</i>	Fe ₂ O ₃	10–16	Spherical	UV, XRD, SEM and FTIR	Antibacterial activity	(Suganya, D., Rajan, M. R. and Ramesh., 2016)
<i>Passiflora tripartite</i>	Fe ₃ O ₄	22.3	Spherical	TEM, DLS, FTIR, UV and	2-arylbenzimidazole	(Kumar et al., 2014)

				XRD	fabrication	
<i>Phragmites australis</i>	Fe _x O _y	24.4-68.1	Irregular	UV, FTIR, DLS, Zeta potential, SEM-EDX and Raman	Photocatalytic activity	(Salgado et al., 2019)
<i>Phyllanthus Niruri</i>	Fe ₃ O ₄	10	Cubic	IR, UV, TEM, SEM and XRD	Antimicrobial activity	(Viju Kumar & Prem, 2018)
<i>Piliostigma thonningii</i>	Fe	20,000	Irregular clusters	XRD and SEM	Antibacterial activity	(Igwe & Nwamezie, 2018)
<i>Platanus orientalis</i>	Fe ₂ O ₃	78–80	Spherical	XRD, SEM, TEM, UV, FTIR, EDX and DLS	Antifungal activity	(Devi et al., 2019)
<i>Prunus serotina</i>	Fe	12	Spherical	DLS, TEM, XRD and FTIR	-	(Murgueitio et al., 2016)
<i>Psidium guajava</i>	Fe ₃ O ₄	13–23	-	UV, FTIR, SEM and TEM	Doxorubicin drug loading	(Moustafa & Din, 2017)
<i>Punica granatum</i>	Fe	10	-	UV	Dye degradation	(Ozkan et al., 2018)
<i>Ricinus communis</i>	Fe	10–35	Irregular	UV, FTIR, XRD, XPS, SEM, EDX and TEM	Catalytic effects in transesterification of castor oil	(Rengasamy et al., 2016)
<i>Rosemarinus officinalis</i>	Fe	50	Spherical	DLS, FESEM, XRD, TEM, Raman and FTIR	Cytotoxic activity	(Farshchi et al., 2018)
<i>Rumex acetosa</i>	Fe ₃ O ₄	10–40	-	TEM, SAED, EELS, XPS and DLS	-	(Makarov et al., 2014)
<i>Sageretia thea</i>	Fe ₂ O ₃	30	Tetragonal	XRD, FTIR, Raman, EDS, HR-SEM, HR-TEM and SAED	Pharmacognostic properties	(Khalil, Ovais, Ullah, Ali, Khan Shinwari, et al., 2017)
<i>Salvia officinalis</i>	Fe	5–25	Spherical	SEM, XPS, FTIR and XRD	Dye degradation	(Wang et al., 2015)
<i>Simarouba glauca</i>	Fe ₂ O ₃	43–48	Spherical	UV, FTIR and SEM	Antibacterial, biofilm inhibition and dye degradation activities	(Kanchana & Zantye, 2018)
<i>Sorghum bran</i>	Fe	50	Irregular	FESEM, HR-TEM, UV, XRD, EDS and Zeta potential	Dye degradation	(Njagi et al., 2011)
<i>Spinacia oleracea</i>	Fe	-	-	UV	Wastewater treatment	(Turakhia et al., 2018)
<i>Stevia rebaudiana</i>	Fe ₂ O ₃	25	Spherical	XRD, FESEM, HRTEM, TGA, XPS, VSM and Zeta potential	Antioxidant activity	(Khatami et al., 2019)
<i>Syzygium aromaticum</i>	FeO	23–29	-	UV, FTIR, DLS, Zeta potential, XRD and PSA	Cytotoxic activity	(Thenmozhi et al., 2019)
<i>Terminalia chebula</i>	Fe	80	Irregular	UV, XRD, FTIR, EDS and TEM	-	(Mohan Kumar et al., 2013)
<i>Trachyspermum ammi</i>	Fe	50–90	-	UV and DLS	-	(Rani et al., 2016)
<i>Vaccinium floribundum</i>	Fe	5–10	Spherical	TEM, XRD and FTIR	Removal of petroleum oil from contaminated water and soil	(Murgueitio et al., 2018)
<i>Vitex negundo</i>	Fe ₂ O ₃	20–22	Spherical and Hexagonal	UV, XRD, SEM and HR-TEM	-	(Karnan et al., 2018)

Table S8. The Plant-Mediated Synthesis of Cobalt and Cobalt Oxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Apium graveolens</i>	Co ₃ O ₄	21–72	Irregular	FESEM, XRD and UV	Antibacterial activity	(Urabe & Aziz, 2019)
<i>Aspalathus linearis</i>	Co ₃ O ₄	2–7	Spherical	HRTEM, EDS, XRD, ATR-FTIR, Raman, XPS		(Diallo et al., 2015)
<i>Azadirachta indica</i>	Co ₃ O ₄	1–7	Quasi-spherical	XRD, HRTEM, EDX, DRS, PL, Raman and VSM	Photocatalytic and antimicrobial activity	(Sivachidambaram et al., 2017)
<i>Calotropis gigantea</i>	Co ₃ O ₄	50–60	Spherical	XRD, UV, SEM, TEM and EDX	Photocatalytic and electrocatalytic activity	(J. K. Sharma et al., 2015)
<i>Calotropis procera</i>	Co ₃ O ₄	10	Spherical	XRD, DSC, TEM, EDX, FTIR and UV	Ecotoxic activity	(Dubey et al., 2018)
<i>Camellia sinensis</i>	Co ₃ O ₄	21–72	Irregular	FESEM, XRD and UV	Antibacterial activity	(Urabe & Aziz, 2019)
<i>Chromolaena odorata</i>	Co	20–49	Irregular, Cubic and Hexagonal	UV, FTIR, SEM and XRD	Antibacterial activity	(Igwe, 2018)
<i>Conocarpus erectus</i>	Co	20–60	Spherical	SEM and XRD		(Ahmed, 2016)
<i>Euphorbia heterophylla</i>	Co ₃ O ₄	69.75	Spherical	FTIR, UV, PSA, XRD and DRS	Photocatalytic activity	(Dewi et al., 2019)
<i>Geranium wallichianum</i>	CoO	21	Agglomerated	SEM, XRD, DLS, FTIR, EDX and Raman	Antibacterial, antioxidant, cytotoxic and enzyme inhibition properties	(Iqbal, Abbasi, Batool, et al., 2019)
<i>Gingko biloba</i>	Co ₃ O ₄	30–100	Irregular	XRD, TEM and SEM	Enhanced electrocatalysis	(Han et al., 2015)
<i>Helianthus annuus</i>	Co ₃ O ₄	200–500	Plate-shaped	XRD, TGA, SEM and PSA	Photocatalytic activity	(Nomura et al., 2019)
<i>Hibiscus rosa-sinensis</i>	Co ₃ O ₄	40.05–61.32	Cubical spinel	XRD, FESEM, EDX, PL, FTIR and UV	Antibacterial and antifungal activity	(Anuradha & Raji, 2019)
<i>Mangifera indica</i>	Co	25–40	Irregular, Cubic and Pentagonal	UV, XRD, FTIR and SEM	Detection of Manganese (II) Ions in industrial wastewater	(Okwunodulu et al., 2019)
<i>Manihot esculenta crantz</i>	Co ₃ O ₄	-	Octahedral	XRD, SEM, EDAX, TEM, TGA, FTIR and VSM		(Ikhuoria et al., 2018)
<i>Moringa oleifera</i>	Co ₃ O ₄	20–50	Spinel cubic	XRD, EDS, EDX, SAED, HRTEM	Electrochemical electrode for supercapacitors	(Matinise et al., 2018)
<i>Nerium indicum</i>	Co	20–60	Spherical	SEM and XRD		(Ahmed, 2016)
<i>Ocimum sanctum</i>	Co	-	Spherical	UV, FTIR, SEM, EDAX and XRD	Antimicrobial activities	(Kuchekar et al., 2018)
<i>Piper longum</i>	Co	-		CV	Sensing organic compounds	(Ranaei Siadat, 2015)
<i>Punica granatum</i>	Co ₃ O ₄	40–80	Spherical	XRD, SEM, EDX, AFM, FTIR and UV	Photocatalytic activity	(Bibi, Nazar, et al., 2017)
<i>Raphanus sativus</i>	Co	80	Spherical	UV, FTIR and SEM	Antibacterial and cytotoxic activity	(Koyyati et al., 2016)
<i>Sageretia thea</i>	Co ₃ O ₄	20.03	Cubic	XRD, FTIR, Raman, HRTEM, HRSEM, SAED and EDS	Antibacterial, cytotoxic and antileishmanial activity	(Khalil, Ovais, Ullah, Ali, Shinwari, et al., 2017)
<i>Sechinum edule</i>	Co ₃ O ₄	5.8–38.1	Irregular	XRD, FTIR, AFM, SEM, TEM and VSM	Electrochemical H ₂ O ₂ sensing	(Das & Golder, 2017)
<i>Taraxacum officinale</i>	Co ₂ O ₃	50–100	Spherical	UV, FTIR, DLS, SEM	Dye degradation	(Rasheed et al., 2019)

nale				and TEM		
<i>Vitis vinifera</i>	Co ₃ O ₄	10–20	Spherical rods	XRD, FTIR, Raman, TEM, SAED, EDX, DRS, PL and VSM	Catalytic, photocatalytic and antibacterial activity	(Kombaiah et al., 2018)

Table S9. The Plant-Mediated Synthesis of Nickel and Nickel Oxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Aegle marmelos</i>	NiO	8–10	Spherical	HRSEM, HRTEM, XRD and FTIR	Cytotoxic, antibacterial and photocatalytic activity	(Ezhilarasi et al., 2018)
<i>Agathosma betulina</i>	NiO	15–55	Cubic	TEM, EDS, XRD, FTIR, Raman and PL	Photodiode activity	(Thema et al., 2016)
<i>Ageratum conyzoides</i>	NiO	8–15	Cubic	UV, FTIR, XRD and TEM	Catalytic activity	(Wardani et al., 2019)
<i>Aloe vera</i>	NiO	50–70	Rod-like	SEM, XRD and FTIR	Catalytic activity	(Juibari & Eslami, 2019)
<i>Azadirachta indica</i>	Ni & NiO	17–70	Spherical	TEM, SEM, XRD and AMS	Cytotoxic activity	(Mariam et al., 2014)
<i>Callistemon viminalis</i>	NiO	20–35	-	UV, Raman, SEM, XPS and XRD	Pseudo-capacitors	(Sone et al., 2016)
<i>Calotropis gigantea</i>	Ni & NiO	20–60	-	UV, FTIR and XRD	Catalytic and antimicrobial activity	(Din et al., 2018)
<i>Camellia sinensis</i>	Ni	43.87–48.76	Spherical	SEM, EDX and XRD	Photocatalytic activity	(Bibi, Kamal, et al., 2017)
<i>Coriandrum sativum</i>	Ni	30.71	-	UV, FTIR and XRD	-	(Vasudeo & Pramod, 2016)
<i>Desmodium gangeticum</i>	Ni	-	Spherical	UV, XRD, FTIR, VSM and Zeta potential	Biological activities	(Sudhasree et al., 2015)
<i>Dioscorea orangeana</i>	Ni	2–3	Spherical	UV, XRD, SEM and EDAX	Antimicrobial activity	(Helen & Rani, 2015)
<i>Geranium wallichianum</i>	NiO	21	Spherical	XRD, SEM, TEM, FTIR, EDS, Raman, DLS and UV	Biological activities	(Abbasi et al., 2019)
<i>Hibiscus rosa-sinensis</i>	Ni	10–200	Spherical	SEM, TEM and XRD	-	(Kar & Ray, 2014)
<i>Medicago sativa</i>	Ni	1–6	Spherical	TEM, XRD, FTIR and XPS	-	(Chen et al., 2014)
<i>Monsonia burkenea</i>	NiO	20	Spherical	FTIR, EDX, HRTEM and XRD	Photocatalytic, antibacterial and cytotoxic activity	(Kganyago et al., 2018)
<i>Moringa oleifera</i>	NiO	-	Spherical	XRD, FTIR, HRTEM, EDX and PL	Cytotoxic activity	(Ezhilarasi et al., 2016)
<i>Nephelium lappaceum</i>	NiO	50	Irregular	TEM, SEM, PSA and XRD	Antibacterial activity	(Yuvakkumar et al., 2014)
<i>Ocimum sanctum</i>	Ni	15–36	Spherical to polyhedral	FTIR, UV, XRD, SEM and TEM	Dye and pollutant adsorption	(Pandian et al., 2015)
<i>Physalis angulata</i>	NiO	64.13	Spherical	FTIR, Raman, XRD, UV, PSA, SEM-EDS and TEM-SAED	-	(Sulaiman & Yulizar, 2018)
<i>Piper betle</i>	Ni	31	Spherical	UV, FTIR, TEM, EDX, PSA, RSM and XRD	-	(Kale, Barwar, Kane & Contractor, 2018)
<i>Psidium guajava</i>	Ni & NiO	17–70	Spherical	TEM, SEM, XRD and AMS	Cytotoxic activity	(Mariam et al., 2014)
<i>Rhamnus virgata</i>	NiO	24	Spherical	UV, XRD, FTIR, SEM, EDS, TEM, Raman and DLS	Biological activities	(Iqbal, Abbasi, Mahmood, et al., 2019)
<i>Rheum turkestanicum</i>	NiO	12–15	Cubic	FESEM, EDX, FTIR and XRD	Photocatalytic and cytotoxic activity	(Saheb et al., 2019)
<i>Tamarix serotina</i>	NiO	10–14	Spherical	XRD, FTIR, UV, TEM, VSM and BET	Catalytic activity	(Nasseri et al., 2016)
<i>Taxus brevifolia</i>	Ni	22	Hexagonal	UV, SEM, FESEM, XRD, FTIR and TEM	Antibacterial and anticancer activity	(Sarli et al., 2018)

Table S10. The Plant-Mediated Synthesis of Copper and Copper Oxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Abutilon indicum</i>	CuO	16.78	Hexagonal	XRD, EDX, SEM and UV	Antimicrobial, anti-oxidant and photocatalytic activities	(Ijaz et al., 2017)
<i>Acanthospermum hispidum</i>	CuO	5–25	Spherical	FESEM, EDX, TEM, XRD, FTIR and PL	Biological activities	(Pansambal, Deshmukh, et al., 2017)
<i>Aglaia elaeagnoides</i>	CuO	20–45	Spherical	FESEM, XRD, EDX, TEM and TGA-DSC	Catalytic and recyclability properties	(Manjari et al., 2017)
<i>Albizia lebeck</i>	CuO	100	Spherical	UV, SEM, TEM, EDS and XRD	-	(Jayakumarai et al., 2015)
<i>Alchornea laxiflora</i>	Cu	3.29	Spherical	UV, HRTEM, EDX and FTIR	Oxidative desulphurisation of model oil	(Olajire et al., 2018)
<i>Allium cepa</i>	Cu	21–23	Spherical	UV, AFM, SEM and EDX	Enhancement of plant growth	(Mansi P. et al., 2017)
<i>Aloe barbadensis</i>	Cu	80–120	Spherical & Cubic	UV, FTIR, XRD and SEM	Photocatalytic activity	(Batoool, 2018a)
<i>Aloe vera</i>	Cu	251.1	-	TEM, UV, Zeta potential	Bioleaching	(Pawlowska & Sadowski, 2017)
<i>Anthemis nobilis</i>	CuO	18.02–61.29	Rectangular	SEM, EDS, XRD, FTIR and UV	Catalytic activity	(Nasrollahzadeh, Mohammad Sajadi, et al., 2015)
<i>Arbutus unedo</i>	CuO	33	Spherical	XRD, FTIR, UV, EDS and TEM	Cytotoxic activity	(Yu et al., 2018)
<i>Asparagus adscendens</i>	Cu	10–15	Spherical	UV, FTIR and HRTEM	Antimicrobial activity	(Thakur et al., 2018)
<i>Azadirachta indica</i>	Cu	48–73	Cubic	SEM, UV, FTIR, TEM, EDS and XRD	-	(Nagar & Devra, 2018)
<i>Bauhinia tomentosa</i>	CuO	22–40	Spherical	XRD, UV, TEM, EDX and FTIR	Antibacterial activity	(Sharmila et al., 2018)
<i>Calotropis procera</i>	Cu	15	Spherical	TEM, XRD, EDAX and FTIR	Cytotoxic activity	(Harne et al., 2012)
<i>Calotropis gigantea</i>	CuO	20	Spherical	FESEM, EDX, TEM, XRD and FTIR	Dye-sensitised solar cells application	(Jitendra Kumar Sharma et al., 2015)
<i>Camellia sinensis</i>	Cu	50–100	-	TEM, UV and XRD	-	(Mohindru & Garg, 2017)
<i>Capparis spinosa</i>	Cu	17–41	Spherical	UV, FTIR, SEM and EDX	Antibacterial activity	(Ebrahimi et al., 2017)
<i>Capparis zeylanica</i>	Cu	50–100	Cubic	UV, FTIR, XRD, SEM, EDX and TEM	Antimicrobial activity	(Saranyaadevi et al., 2014)
<i>Carica papaya</i>	Cu	20	Spherical	UV, FTIR, XRD, SEM and TEM	-	(Suresh et al., 2014)
<i>Cassia auriculata</i>	Cu	38.1–43.5	Spherical	FESEM, XRD, UV and FTIR	-	(Mohan et al., 2017)
<i>Citrus limon</i>	Cu	60–100	Spherical	UV, FTIR, XRD, SEM and TEM	Antimicrobial activity	(Jayandran et al., 2015)
<i>Citrus medica</i> Linn	Cu	10–60	-	UV, DLS and XRD	Antimicrobial activity	(Shende et al., 2015)
<i>Citrus sinensis</i>	Cu	2	Spherical	UV	Antifungal activity	(Kale et al., 2017)
<i>Coffea</i>	CuO	100	Spherical	SEM, XRD, UV and FTIR	Antibacterial activity	(Sutradhar et al., 2014)
<i>Cordia sebestena</i>	CuO	20–35	Spherical	UV, FTIR, FESEM-EDX, TEM, SAED, DLS and Zeta potential	Photocatalytic and antibacterial activity	(Prakash et al., 2018)
<i>Curcuma longa</i>	Cu	5–20	Spherical	TEM, FESEM, XRD,	Antimicrobial activ-	(Jayarambabu et al., 2020)

				FTIR, UV and EDS	ity	
<i>Cymbopogon</i>	Cu/CuO	5.67–9.10	Spherical	UV, TEM, XRD and EDX	Photocatalytic activity	(Tu, 2019)
<i>Cynomorium coc-cineum</i>	Cu	14.2	Spherical	SEM, EDX, XRD, TGA and FTIR	Photocatalytic activity	(Sebeia et al., 2020)
<i>Drypetes sepiaria</i>	CuO	18.77	Spherical	UV, XRD, FTIR and TEM	Photocatalytic activity	(Narasaiah, Mandal, et al., 2017)
<i>Duranta erecta</i>	Cu	70	Spherical	UV, FTIR, FESEM, EDX, TGA and XRD	Photocatalytic activity	(Ismail et al., 2019)
<i>Eucalyptus camaldul-sensis</i>	CuO	40	Rod	SEM and UV	Antimicrobial activ-ity	(Shanan et al., 2018)
<i>Eclipta prostrata</i>	Cu	23–57	Cubic	SEM, TEM, EDX, XRD, FTIR, SAED and UV	Antioxidant and cytotoxic activities	(Chung et al., 2017)
<i>Euphorbia chamaesyce</i>	CuO	36–40	Irregular	FESEM, EDX, FTIR, TEM and UV	Catalytic activity	(Maham, Sajadi, et al., 2017)
<i>Euphorbia esula</i>	Cu	20–110	Spherical	UV, XRD and TEM	Catalytic activity	(Nasrollahzadeh et al., 2014)
<i>Ferulago angulata</i>	CuO	32–36	Spherical	XRD, FTIR and FESEM	Photocatalytic activ-ity	(Shayegan Mehr et al., 2018)
<i>Ficus religiosa</i>	CuO	577	Spherical	FESEM, FTIR, DLS and XRD	Cytotoxic activity	(Sankar et al., 2014)
<i>Ginkgo biloba</i>	Cu	15–20	Spherical	TEM, EDS, FTIR and UV	Catalytic activity	(Nasrollahzadeh & Mohammad Sajadi, 2015)
<i>Gloriosa superba</i>	CuO	5–10	Spherical	UV, XRD, SEM and TEM	Antibacterial activi-ty	(Naika et al., 2015)
<i>Gum karaya</i>	CuO	4.8–7.8	Irregular	SEM, XRD, FTIR, TEM and XPS	Antibacterial activity	(Padil & Černík, 2013)
<i>Hibiscus rosa-sinensis</i>	CuO	45–80	Spherical	UV, FTIR, XRD, SEM and EDX	Antibacterial activity	(Rajendran et al., 2018)
<i>Ixiro coccinea</i>	CuO	80–110	Irregular	UV, SEM, TEM and FTIR	-	(Vishveshvar et al., 2018)
<i>Lawsonia inermis</i>	Cu	43	Spherical	UV, XRD, FTIR, HRTEM, HRSEM and EDX	Nano bio-composites	(Cheirmadurai et al., 2014)
<i>Macrocystis pyrifera</i>	Cu	102.4	Spherical	SEM, TEM, EDS and Zeta potential	-	(Araya-Castro et al., 2017)
<i>Malus domestica</i>	CuO	34	Cubic	SEM, FTIR, XRD and UV	Antifungal activity	(Choudhary et al., 2018)
<i>Malva sylvestris</i>	CuO	5–30	Spherical	FTIR, SEM, XRD and UV	Antibacterial activity	(Awwad et al., 2015)
<i>Mimusops elengi</i>	Cu	-	Rod & Spher-ical	UV, FTIR, SEM and XRD	Biological activities	(Iyer & Lilian R, 2019)
<i>Moringa oliefera</i>	Cu	-	-	UV and XRD	Enhancement of plant growth	(Sabir et al., 2018)
<i>Murraya koenigii</i>	Cu	-	Spherical	UV, FTIR and SEM	-	(Ashtaputrey et al., 2017)
<i>Musa paradisica</i>	CuO	60	Spherical	XRD, EDX, FESEM and FTIR	Photocatalytic activ-ity	(Aminuzzaman et al., 2017)
<i>Nerium odorum</i>	Cu	139.2	-	UV, PSA, FTIR and TEM	Antimicrobial activ-ity	(Srivastava & Dwivedi, 2018)
<i>Nerium oleander</i>	Cu	-	-	UV and FTIR	Antibacterial activity	(Gopinath et al., 2014)
<i>Ocimum basilicum</i>	CuO	70	Spherical	UV, FTIR and SEM	Antibacterial activity	(Altikatoglu et al., 2017)
<i>Ocimum sanctum</i>	Cu	77	-	XRD and FTIR	-	(Kulkarni & Kulkarni, 2013)
<i>Ocimum tenuiflorum</i>	CuO	-	Irregular	FTIR, SEM, XRD and EDX	-	(Sumitha et al., 2016)
<i>Olea europaea</i>	CuO	20–50	Spherical	XRD, FTIR, SEM and TEM	Toxic activity	(Sulaiman et al., 2017)
<i>Passiflora foetida</i>	Cu	24.54	Spherical	UV, FTIR, SEM,	Antimicrobial activ-	(Fatma et al., 2017)

				XRD, EDX and DLS	ity	
<i>Pelargonium graveolens</i>	Cu	164.7	-	TEM, UV, Zeta potential	Bioleaching	(Pawlowska & Sadowski, 2017)
<i>Phaseolus vulgaris</i>	CuO	27	Spherical	XRD, FTIR, XPS, Raman, DLS, TEM, SAED, SEM and EDX	Cytotoxic activity	(Nagajyothi et al., 2017)
<i>Pheonix dactylifera</i>	CuO	22–28	Spherical	UV, FTIR, XRD, SEM and EDAX	-	(Berra et al., 2018)
<i>Phyllanthus embilica</i>	Cu	15–30	Flakes	UV, FTIR, XRD, SEM and EDAX	Antimicrobial activity	(Caroling et al., 2015)
<i>Plantago asiatica</i>	Cu	7–35	Spherical	FTIR, UV, TEM and XRD	Cyanation of aldehydes	(Nasrollahzadeh et al., 2017)
<i>Polygonum minus</i>	Cu	20–30	Spherical	UV, XRD, FTIR, DLS, FESEM-EDX, Zeta potential and TGA	Photocatalytic and antibacterial activity	(Ullah et al., 2019)
<i>Psidium guajava</i>	CuO	2–6	Spherical	UV, FTIR, FESEM, TEM, EDX and XRD	Photocatalytic activity	(Singh et al., 2019)
<i>Pterospermum acerifolium</i>	CuO	100–250	Oval	UV, FESEM, EDX, FTIR, XPS, Zeta potential and DLS	Toxicity towards <i>Daphnia magna</i>	(Saif et al., 2016)
<i>Punica granatum</i>	CuO	40	Spherical	FTIR, SEM, UV and XRD	Effect on green peach Aphid	(Ghidan et al., 2016)
<i>Rheum palmatum</i>	CuO	10–20	Spherical	FTIR, UV, XRD, SEM and EDX	Catalytic activity	(Bordbar et al., 2017)
<i>Rosa canina</i>	CuO	15–25	Spherical	XRD, FTIR, FESEM, EDS, TEM and UV	Catalytic activity	(Hemmati et al., 2018)
<i>Saraca indica</i>	CuO	40–70	Spherical	UV, FTIR, XRD, EDX, XPS, SEM, TEM and HRTEM	-	(Prasad et al., 2017)
<i>Solanum tuberosum</i>	Cu	5–40	Spherical	UV, XRD, FTIR, SEM and TEM	-	(Suresh et al., 2014)
<i>Stachys lavandulifolia</i>	Cu/Cu ₂ O	80	Spherical	UV, TEM, XRD and FTIR	-	(Khatami et al., 2017)
<i>Syzygium alternifolium</i>	CuO	2–69	Spherical	FTIR, UV, XRD, AFM, SEM, TEM and DLS	Antiviral activity	(Yugandhar et al., 2018)
<i>Syzygium aromaticum</i>	Cu	20	Spherical	FESEM, HRTEM, EDS, Zeta potential, UV, XRD and FTIR	Antimicrobial activity	(K. M. Rajesh et al., 2018)
<i>Tabernaemontana divaricate</i>	CuO	48	Spherical	UV, XRD, FTIR, SEM, EDX and TEM	Antibacterial activity	(Sivaraj et al., 2014)
<i>Terminalia arjuna</i>	Cu	20–30	Spherical	XRD, FTIR, TGA, FESEM and EDX	Biological activity	(Yallappa et al., 2013)
<i>Terminalia catappa</i>	Cu/CuO/Cu ₂ O	21–30	Spherical	TEM, SEM, FTIR, XRD and TGA	Antibacterial activity	(Muthulakshmi et al., 2017)
<i>Thymbra spicata</i>	CuO	10–20	Spherical	FTIR, XRD, FESEM, TEM, EDS, WDX and UV	Catalytic activity	(Veisi et al., 2017)
<i>Thymus vulgaris</i>	CuO	-	-	TEM, EDS, FTIR, XRD, TGA and DTA	Catalytic activity	(Nasrollahzadeh et al., 2016)
<i>Tinospora cardifolia</i>	Cu	63.3	Spherical	UV, XRD, PSA, Zeta potential, FESEM, EDX, AFM, Raman and TEM	Antimicrobial activity	(P. Sharma et al., 2019)
<i>Vitis vinifera</i>	CuO	25–50	Spherical	UV, FTIR, XRD, EDX and SEM	-	(Demirci Gultekin et al., 2017)
<i>Ziziphus mauritiana</i>	CuO	20–45	Spherical	XRD, SEM, EDX and	-	(Pansambal, Gavande, et al.,

				TEM	2017)
<i>Ziziphus spina-christi</i>	Cu	5–20	Spherical	UV, FTIR, FESEM, TEM and XRD	Photocatalytic and antibacterial activity (Khani et al., 2018)

Table S11. The Plant-Mediated Synthesis of Zinc and Zinc Oxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Acalypha indica</i>	ZnO	20	Spherical	XRD, PSA, SEM, TEM and SAA	Textile coating, hydrophobicity, UV resistance and antibacterial activity	(Karthik et al., 2017)
<i>Adhatoda vasica</i>	ZnO	85–95	Spherical & Irregular	XRD, FTIR and SEM	Catalytic activity	(Anvekar et al., 2017)
<i>Agathosma betulina</i>	ZnO	15.8	Quasi-spherical	TEM, EDX, XRD, FTIR and Raman	-	(Thema et al., 2015)
<i>Albizia lebbek</i>	ZnO	66.25–112.87	Spherical & Irregular	UV, XRD, FTIR, Zeta potential, SEM and EDX	Antimicrobial, antioxidant and cytotoxic activities	(Umar et al., 2019)
<i>Allium sativum</i>	ZnO	88.67–101.59	Spherical	AFM, XRD, FTIR and UV	-	(Slman et al., 2018)
<i>Aloe barbadensis</i>	ZnO	25–40	Spherical	UV, FTIR, PL, SEM, TEM and XRD	-	(Sangeetha et al., 2011)
<i>Aloe vera</i>	ZnO	22.18	Hexagonal	XRD, SEM, UV, PL, BET and TGA	Photocatalytic and antibacterial activity	(Varghese & George, 2015)
<i>Ananas comosus</i>	ZnO	30–57	Hexagonal	FESEM, EDX, UV and XRD	Antibacterial activity	(Ahmad et al., 2019)
<i>Andrographis paniculata</i>	Zn	-	-	XRD, EDX, SEM, FTIR and UV	Antimicrobial activity	(Devasenan et al., 2016)
<i>Anisochilus carnosus</i>	ZnO	20–40	Spherical	PL, FTIR, XRD, TEM and FESEM	Photocatalytic and antibacterial activity	(Anbuvaran et al., 2015)
<i>Annona muricata</i>	ZnO	17	Semi-spherical	UV, SEM-EDS, XRD and FTIR	-	(Sierra et al., 2018)
<i>Aspalathus linearis</i>	ZnO	24.6–28.5	Quasi-spherical	SEM, EDS, TEM, XRD, DSC, TGA and FTIR	-	(Nethavhanani et al., 2018)
<i>Astragalus gummifer</i>	ZnO	50	Hexagonal	UV, XRD, TGA, FESEM and TEM	Neurotoxicity effect	(Darroudi et al., 2013)
<i>Astragalus membranaceus</i>	ZnO	35–38	Spherical	XRD, FTIR and TEM	-	(R. Yang et al., 2017)
<i>Atalantia monophylla</i>	ZnO	30	Spherical	UV, XRD, FTIR, SEM, EDX and TEM	Antimicrobial activity	(Vijayakumar et al., 2018)
<i>Azadirachta indica</i>	ZnO	24.7	Floral	FTIR, XRD and SEM	Antimicrobial activity	(Noorjahan et al., 2015)
<i>Calotropis gigantea</i>	ZnO	1.5–8.5	Spherical	UV, DLS, XRD, FTIR, SEM, EDX and AFM	Enhancement of tree growth	(Chaudhuri & Malodia, 2017)
<i>Calotropis procera</i>	ZnO	15–25	Spherical	XRD, DRS, TEM and FTIR	Photocatalytic activity	(Gawade et al., 2017)
<i>Camellia sinensis</i>	ZnO	80–120	Hexagonal	UV, FTIR, SEM and XRD	Photocatalytic activity	(Batool, 2018b)
<i>Carica papaya</i>	ZnO	50	Spherical	FESEM, TEM, PXRD, FTIR and UV	Photocatalytic and photovoltaic activities	(Rathnasamy et al., 2017)
<i>Cassia auriculata</i>	ZnO	-	Spherical	SEM, UV, PL and FTIR	-	(Ramesh et al., 2014)
<i>Cassia densistipulata</i>	ZnO	-	Spherical	SEM, UV and FTIR	-	(Kooluru & Sharada, 2014)
<i>Cassia fistula</i>	ZnO	5–15	Irregular sponge-like	UV, XRD and TEM	Photocatalytic, antioxidant and antibacterial activities	(Suresh et al., 2015)
<i>Catharanthus roseus</i>	ZnO	23–57	Spherical	XRD, SEM, EDX and Ra-	Antibacterial activity	(Savithramma &

man Bhumi, 2014)						
<i>Celosia argentea</i>	ZnO	25	Spherical	UV, SEM, DLS, TGA, XRD and FTIR	Antimicrobial and anti-oxidant activities	(Vaishnav et al., 2017)
<i>Cestrum nocturnum</i>	Zn	10–30	Spherical	TEM and FTIR	Antibacterial activity	(N. Paul, Syed, et al., 2016)
<i>Citrus aurantifolia</i>	ZnO	50–200	Spherical	FESEM, PL and XRD	-	(Ain Samat & Md Nor, 2013)
<i>Citrus limon</i>	ZnO	21.5	Spherical	FESEM, UV, FTIR and PL	Photocatalytic activity	(Davar et al., 2015)
<i>Citrus sinensis</i>	ZnO	12.7–24.3	Irregular sponge-like	FTIR, XRD, HRTEM, EDX and UV	Photocatalytic activity	(Luque et al., 2018)
<i>Cocus nucifera</i>	ZnO	20–80	Spherical	UV, XRD, FTIR, TEM and Zeta potential	Combating microfouling	(Krupa & Vimala, 2016)
<i>Coptidis rhizoma</i>	ZnO	2.9–25.2	Spherical & Rod	UV, FTIR, SEM-EDX, TGA, SAED, TEM and XRD	Antibacterial, antioxidant and cytotoxic activities	(Nagajyothi et al., 2014)
<i>Coriandrum sativum</i>	ZnO	66	Floral	XRD, SEM, FTIR and EDX	-	(Gnanasangeetha & Saralathambavani, 2013)
<i>Corymbia citriodora</i>	ZnO	64	Hexagonal	SEM, EDX, XRD, UV, Raman and TGA	Photocatalytic activity	(Zheng et al., 2015)
<i>Costus pictus</i>	ZnO	20–80	Hexagonal	FTIR, XRD, SEM, EDX and TEM	Antimicrobial and anti-cancer activities	(Suresh et al., 2018)
<i>Couroupita guianensis</i>	ZnO	-	Hexagonal	UV, FTIR, XRD, FESEM and Zeta potential	Antimicrobial activity	(Sathishkumar et al., 2017)
<i>Curcuma longa</i>	ZnO	46	Rod	UV, FTIR, SEM and TEM	Antibacterial activity	(Jayandran et al., 2015)
<i>Curcuma neilgherrensis</i>	ZnO	-	-	UV, FTIR, SEM and XRD	Antibacterial activity	(Parthasarathy G et al., 2017)
<i>Cymbopogon citratus</i>	ZnO	85–95	Spherical & Irregular	XRD, FTIR and SEM	Catalytic activity	(Anvekar et al., 2017)
<i>Duranta erecta</i>	ZnO	-	-	UV	-	(Ravindran et al., 2016)
<i>Eucalyptus globulus</i>	ZnO	11.6	Spherical	XRD, FESEM, HRTEM and EDX	Photocatalytic and anti-oxidant activity	(Reddy & Mandal, 2017)
<i>Garcinia mangostana</i>	ZnO	21	Spherical	XRD, FTIR, TEM, FESEM, EDX and UV	Photocatalytic activity	(Aminuzzaman et al., 2018)
<i>Gossypium herbaceum</i>	ZnO	18.97	Hexagonal	XRD, EDX, SEM, FTIR and UV	-	(Sadatzadeh et al., 2018)
<i>Hemidesmus indicus</i>	ZnO	-	-	UV	-	(Manokari & Shekhawat, 2015)
<i>Hibiscus rosa-sinensis</i>	ZnO	30–35	Sponge-like	SEM and XRD	-	(Devi & Gayathri, 2014)
<i>Hibiscus subdariffa</i>	ZnO	16–60	Spherical	UV, FTIR, XRD, FESEM, EDX and HRTEM	Antibacterial and anti-diabetic activity	(Bala et al., 2015)
<i>Hybanthus enneaspermus</i>	ZnO	-	-	UV	-	(Shekhawat et al., 2014)
<i>Ixora coccinea</i>	ZnO	145.1	Spherical	UV, XRD, FTIR, DLS, Zeta potential, SEM and EDX	-	(Yedurkar et al., 2016)
<i>Lantana aculeate</i>	ZnO	12	Spherical	UV, FTIR, XRD, FESEM and HRTEM	Antifungal activity	(Narendhran & Sivaraj, 2016)
<i>Laurus nobilis</i>	ZnO	21.49-25.26	Spherical	UV, FTIR, XRD, EDX and SEM	-	(Fakhari et al., 2019)
<i>Limonia acidissima</i>	ZnO	12–53	Spherical	UV, FTIR, AFM, XRD and HRTEM	Antibacterial activity	(Patil & Taranath, 2016)
<i>Lycopersicon esculentum</i>	ZnO	51.6	Cubic	UV, FTIR, XRD, TEM and SEM	Antibacterial activity	(Ogunyemi et al., 2019)
<i>Mangifera indica</i>	ZnO	23	Semi-spherical	UV, SEM-EDS, XRD and FTIR	-	(Sierra et al., 2018)
<i>Matricaria chamomilla</i>	ZnO	51.2	Cubic	UV, FTIR, XRD, TEM and	Antibacterial activity	(Ogunyemi et al., 2019)

<i>milla</i>				SEM		
<i>Medicago sativa</i>	ZnO	10	Spherical	XRD, EDX, SEM, TEM and FTIR	Antimicrobial activity	(Król et al., 2019)
<i>Melia azedarach</i>	ZnO	-	-	UV	-	(Manokari et al., 2016)
<i>Moringa oleifera</i>	ZnO	52	Hexagonal	UV, FTIR, SEM and XRD	Photocatalytic and anti-bacterial activity	(Pal et al., 2018)
<i>Nephelium lappaceum</i>	ZnO	25–40	Spherical	XRD, UV, DRS, FESEM and HRTEM	Photocatalytic activity	(Karnan & Selvakumar, 2016)
<i>Nyctanthes arbor-tristis</i>	ZnO	12–32	-	UV, FTIR, XRD, DLS and TEM	Antifungal activity	(Jamdagni et al., 2018)
<i>Ocimum basilicum</i>	ZnO	28.13	Floral	FTIR, XRD and SEM	Antimicrobial activity	(Noorjahan et al., 2015)
<i>Olea europaea</i>	ZnO	41	Cubic	UV, FTIR, XRD, TEM and SEM	Antibacterial activity	(Ogunyemi et al., 2019)
<i>Parthenium hysterophorus</i>	ZnO	16–45	Qua-si-spherical, radial & cylindrical	FTIR, UV, SEM, EDX and TEM	Antibacterial activity	(Datta et al., 2017)
<i>Passiflora caerulea</i>	ZnO	70	Spherical	UV, XRD, FTIR, SEM, EDX and AFM	Antibacterial activity	(Santhoshkumar et al., 2017)
<i>Petroselinum crispum</i>	ZnO	40	Spherical	XRD, SEM, DLS and DRS	Antibacterial activity	(Hajiahsrafi & Motakef-Kazemi, 2018)
<i>Phyllanthus Emblica</i>	ZnO	30	Qua-si-spherical	FTIR, XRD, EDAX, PL and TEM	-	(Loganathan et al., 2018)
<i>Phyllanthus niruri</i>	ZnO	69.71–94.36	Spherical	FTIR, SEM and TEM	Antibacterial activity	(Noorjahan, 2019)
<i>Physalis alkekengi</i>	ZnO	72.5	Triangular	XRD, TEM and EDS	-	(Qu, Yuan, et al., 2011)
<i>Plectranthus amboinicus</i>	ZnO	20–50	Spherical & Hexagonal	UV, FTIR, TEM and XRD	Antibacterial, antibio-film and larvicidal activity	(Vijayakumar et al., 2015)
<i>Polygala tenuifolia</i>	ZnO	33.03–73.48	Spherical	UV, FTIR, TGA, TEM, SEM and EDX	Antioxidant and anti-inflammatory activities	(Nagajyothi et al., 2015)
<i>Poncirus trifoliata</i>	ZnO	8.48–32.51	Spherical	UV, FTIR, TGA, GC-MS, XRD, SEM-EDX and TEM	Catalytic activity	(Nagajyothi et al., 2013)
<i>Pongamia pinnata</i>	ZnO	100	Hexagonal	XRD, UV, DLS, SEM, TEM and FTIR	Antibacterial activity	(Sundrarajan et al., 2015)
<i>Punica granatum</i>	ZnO	32.98-81.84	Hexagonal	UV, XRD, TEM, FESEM and FTIR	Cytotoxicity and anti-bacterial activities	(Mohamad Sukri et al., 2019)
<i>Rosa canina</i>	ZnO	50	Spherical	XRD, SEM, EDX, FTIR and DLS	Antibacterial activity	(Jafarirad et al., 2016)
<i>Rosmarinus officinalis</i>	ZnO	14–27	Hexagonal	XRD, FTIR, TEM and EPR	Antibacterial activity	(Stan et al., 2016)
<i>Rubia cordifolia</i>	ZnO	14.18	Spherical	XRD, SEM and TEM	Antibacterial activity	(Mushtaq et al., 2017)
<i>Scadoxus multiflorus</i>	ZnO	31	Spherical & Irregular	FTIR, XRD, Zeta potential and TEM	Antifungal, ovicidal and larvicidal activities	(Al-Dhabi & Arasu, 2018)
<i>Sedum alfredii hance</i>	ZnO	53.7	Pseudo-spherical	XRD, TEM and EDS	-	(Qu, Luo, et al., 2011)
<i>Sesamum indicum</i>	ZnO	-	-	UV	-	(Manokari et al., 2019)
<i>Solanum nigrum</i>	ZnO	20-30	Qua-si-spherical	UV, DRS, PL, XRD, FTIR, FESEM, TEM, TG-DTA, XPS	Antibacterial activity	(Ramesh et al., 2015)
<i>Solanum torvum</i>	ZnO	38	Spherical	UV, XRD, FTIR, DLS, TEM, SEM and Zeta potential	Toxicity studies	(Ezealisiji et al., 2019)
<i>Spilanthes acmella</i>	Zn	-	Wire-like	TEM	-	(N. Paul, Khole, et al., 2016)
<i>Spinacia oleracea</i>	ZnO	30	-	UV, FTIR, XRD and SEM	Antimicrobial activity	(Sachudanandam et

						al., n.d.)
<i>Tamarindus indica</i>	ZnO	16–31	Spherical	UV, PL, XRD, FTIR, FESEM and EDX	Antibacterial and anti-fungal activities	(Elumalai et al., 2015)
<i>Trifolium pratense</i>	ZnO	60–70	-	UV, XRD, FTIR, SEM and EDX	Antibacterial activity	(Dobrucka & Długaszewska, 2016)
<i>Vitex negundo</i>	ZnO	10–130	Hexagonal	UV-DSR, XRD and DLS	Interaction with human serum albumin	(Ambika & Sundrarajan, 2015)
<i>Zingiber officinale</i>	ZnO	30–50	Spherical	FESEM, EDX and FTIR	-	(Anand Raj & Jayalakshmy, 2015)

Table S12. The Plant-Mediated Synthesis of Palladium and Palladium Oxide Nanoparticles.

Plant Species	Nano-particle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Acacia senegal</i>	Pd	9.1	Spherical	UV, FTIR, XRD, TEM, XPS, DLS and TGA	-	(Keerthi Devi et al., 2010)
<i>Anacardium occidentale</i>	Pd	2,5–4.5	Spherical	XRD, TEM, UV and FTIR	-	(Sheny et al., 2012)
<i>Ananas comosus</i>	Pd	1.71–16.14	Spherical	UV, XRD, FTIR, HRTEM and EDX	Photocatalytic activity	(Olajire & Mohammed, 2019)
<i>Annona squamosa</i>	Pd	100	Spherical	UV, XRD and TEM	Acaricidal, insecticidal and larvicidal activities	(S. M. Roopan et al., 2012)
<i>Anogeissus latifolia</i>	Pd	4.8	Spherical	UV, DLS, TEM and XRD	Antioxidant and catalytic activity	(Kora & Rastogi, 2018)
<i>Artemisia abrotanum</i>	Pd	20	Spherical	UV, XRD, FTIR, FESEM, TEM and EDS	Catalytic activity	(Ahmadi et al., 2018)
<i>Aspalathus linearis</i>	Pd & PdO	3.8–22	Spherical	UV, HRTEM, DSC, XRD, EDS, XPS and Raman	-	(Ismail et al., 2017)
<i>Asparagus racemosus</i>	Pd	1–6	Spherical	UV, TEM and CV	-	(Raut et al., 2013)
<i>Camellia sinensis</i>	Pd	6–18	Spherical	UV, XRD, TEM and SEM	Antioxidant, antibacterial and antiproliferative activities	(Azizi et al., 2017)
<i>Catharanthus roseus</i>	Pd	38	Spherical	UV, XRD, FTIR and TEM	Photocatalytic activity	(Kalaiselvi et al., 2015)
<i>Chlorella vulgaris</i>	Pd	15	Spherical	TEM, SEM, FTIR and UV	-	(Arsiya et al., 2017)
<i>Chrysophyllum cainito</i>	Pd	-	Flower-like	HRTEM and XRD	Catalytic activity	(Majumdar et al., 2017)
<i>Cinnamom zeylanicum</i>	Pd	15–20	Spherical	TEM, EDX, XRD and FTIR	-	(M. Sathishkumar et al., 2009)
<i>Cinnamomum camphora</i>	Pd	3.2–6	Quasi-spherical	UV, XRD, HRTEM, EDX, SAED and XPS	-	(Yang et al., 2010)
<i>Coffea</i>	Pd	20–60	Spherical	TEM, UV and XRD	-	(Nadagouda & Varma, 2008)
<i>Curcuma longa</i>	Pd	10–15	Spherical	TEM, XRD, FTIR and EDX	-	(M Sathishkumar et al., 2009)
<i>Delonix regia</i>	Pd	10	-	UV, DLS, XRD, TEM, EDS and FTIR	Catalytic activity	(Dauthal & Mukhopadhyay, 2013)
<i>Diospyros kaki</i>	Pd	50–120	Spherical	UV, SEM and FTIR	Antibacterial activity	(Attar & Altikatoglu Yapaoz, 2018)
<i>Euphorbia granulate</i>	Pd	25–35	-	FTIR, UV and TEM	Catalytic activity	(Nasrollahzadeh & Mohammad Sajadi, 2016)
<i>Filicium decipiens</i>	Pd	2–22	Spherical	UV, TEM, XRD and FTIR	Antibacterial activity	(Sharmila et al., 2017)
<i>Gardenia jasminoides</i>	Pd	3–5	Spherical,	UV, XRD, FTIR and	Catalytic activity	(Jia et al., 2009)

			rod and polyhedral	TEM		
<i>Gloriosa superba</i>	Pd	0.8–3	Spherical	UV, HRTEM, EDS and DLS	Cytotoxic activity	(Rokade et al., 2018)
<i>Glycin max</i>	Pd	12	-	FTIR, XRD, HRTEM and SEM	-	(Suryawanshi et al., 2018)
<i>Hibiscus sabdariffa</i>	Pd	10	Spherical	UV, TEM, XRD, FTIR, SEM and EDX	Catalytic activity	(Hekmati et al., 2017)
<i>Hippophae rhamnoides</i>	Pd	5	Spherical	XRD, SEM, TEM and UV	Catalytic activity	(Nasrollahzadeh, Sajadi, et al., 2015)
<i>Lithodora hispidula</i>	Pd	15.03–21.6	Rod	UV, PMS, XRD, SEM and EDX	Electrocatalytic activity	(Turunc et al., 2017)
<i>Moringa oleifera</i>	Pd	2–18	Spherical	UV, TEM, Zeta potential, TGA, SEM and FTIR	Catalytic and biological activities	(Anand & Ranjan, 2016)
<i>Musa paradisiaca</i>	Pd	50	-	UV, SEM-EDS, XRD, DLS and FTIR	-	(Bankar et al., 2010)
<i>Ocimum sanctum</i>	Pd	10–80	-	PXRD, SEM, TEM, EDX, XPS, H2-TPR and SAA	Catalytic activity	(Saikia et al., 2016)
<i>Origanum vulgare</i>	Pd	2.2	Spherical	UV, FTIR, XRD, TEM, EDX and TGA	Catalytic activity	(Rafi Shaik et al., 2017)
<i>Pimpinella tirupatensis</i>	Pd	12.25	Spherical	UV, FTIR, XRD and TEM	Photocatalytic activity	(Narasaiah, Kumar Mandal, et al., 2017)
<i>Pinus resinosa</i>	Pd	3.25	Spherical	FTIR, UV, ICPAE, XPS, TEM and XRD	Catalytic activity	(G. Liu et al., 2017)
<i>Piper nigrum</i>	Pd	2–7	Spherical	XRD, FESEM, EDS, TEM, ATR-IR, UV, BET, TGA and ICP-OES	Aryl halide cyanation and Miyama cross-coupling reaction	(Kandathil et al., 2018)
<i>Prunus yedoensis</i>	Pd	50–150	Spherical	UV, XRD and FTIR	Antibacterial activity	(Manikandan et al., 2016)
<i>Pulicaria glutinosa</i>	Pd	20–25	-	UV, XRD, TEM, EDX and FTIR	Catalytic activity	(Khan et al., 2014)
<i>Sapium sebiferum</i>	Pd	2–5	Spherical	UV, FTIR, XRD, SEM, HRTEM, TGA and DLS	Photocatalytic and antibacterial activities	(Tahir et al., 2016)
<i>Solanum trilobatum</i>	Pd	60–70	Spherical	UV, FTIR and SEM	-	(Kanchana et al., 2010)
<i>Trigonella foenum-graecum</i>	Pd	20–50	Spherical	UV, SEM, SAED, FTIR and XRD	Catalytic activity	(Mallikarjuna et al., 2017)

Table S13. The Plant-Mediated Synthesis of Silver and Silver Oxide Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Achillea bieberstennii</i>	Ag	10–40	Spherical & Pentagonal	UV, FTIR, TEM and DLS	Cytotoxic activity	(Baharara et al., 2015)
<i>Achyranthes aspera</i>	Ag	30–80	Spherical	UV, SEM and XRD	-	(Prasad Peddi & Abdallah Sadeh, 2018)
<i>Albizia lebbeck</i>	Ag	12	Spherical	FTIR, UV and SEM	-	(Félix-Domínguez et al., 2019)
<i>Allium cepa</i>	Ag	34	Spherical	UV, DLS and TEM	Antibacterial activity	(Saxena et al., 2010)
<i>Allium sativum</i>	Ag	23–61	Spherical	SEM, EDX, XRD and UV	Antimicrobial activity	(Bouqellah et al., 2019)
<i>Aloe vera</i>	Ag	70	Triangular & Spherical	SEM, DLS, FTIR and UV	Antifungal activity	(Medda et al., 2015)
<i>Alstonia scholaris</i>	Ag	15–38	Spherical	UV, XRD, TEM,	-	(Shimpi et al., 2015)

				FESEM, PL and FTIR		
<i>Althaea officinalis radix</i>	Ag	112	Spherical	TEM, DLS and AAS	-	(Korbekandi et al., 2016)
<i>Ananas comosus</i>	Ag	12	Spherical	UV, EDAX, SAED, HRTEM and XRD		(Ahmad & Sharma, 2012)
<i>Artemisia annua</i>	Ag	-	-	UV	Antimicrobial, antioxidant and corrosion inhibition potentials	(Johnson et al., 2014)
<i>Artemisia vulgaris</i>	Ag	27–53	Spherical	UV, SEM, EDX, TEM, AFM and FTIR	Antibacterial, antioxidant and cytotoxic activities	(Rasheed et al., 2017)
<i>Asclepias curassavica</i>	Ag	75–95	Spherical	FTIR, XRD, PSA and UV	-	(Rajesh et al., 2018)
<i>Azadirachta indica</i>	Ag	200	Triangular	UV, DLS, SEM, TEM, EDS and FTIR	Antimicrobial and toxic activities	(Banerjee et al., 2014)
<i>Berberis vulgaris</i>	Ag	30–70	Spherical	UV, XRD, TEM and DLS	Antibacterial activity	(Behravan et al., 2019)
<i>Boerhaavia diffusa</i>	Ag	25	Spherical	SEM-EDAX, XRD, TEM, UV and FTIR	Antibacterial activity	(Vijay Kumar et al., 2014)
<i>Brassica oleracea</i>	Ag	30–50	Spherical	UV, XRD, SEM and EDAX	Antimicrobial activity	(R. Tamileswari et al., 2015)
<i>Bryophyllum pinnatum</i>	Ag	70–90	Spherical	UV, XRD, FTIR, SEM and TEM	Antibacterial activity	(Borah, 2012)
<i>Butea monosperma</i>	Ag	35	Spherical	FTIR, XRD, SAED, HRTEM and DLS	Cytotoxic and antibacterial activities	(Pattanayak et al., 2017)
<i>Calliandra haematocephala</i>	Ag	70	Spherical	SEM, EDS, XRD, UV and FTIR	Antibacterial and hydrogen peroxide sensing capability	(Raja et al., 2017)
<i>Callistemon lanceolatus</i>	Ag ₂ O	3–30	Oval & Hexagonal	UV, FTIR, XRD, SEM-EDX and HRTEM	Antioxidant and cytotoxic activity	(Ravichandran et al., 2016)
<i>Calotropis gigantea</i>	Ag	12–84	-	UV, SEM, XRD and FTIR	-	(Sivakumar et al., 2011)
<i>Camellia sinensis</i>	Ag	65–70	-	XRD, SEM, UV, DLS and Zeta potential	Antimicrobial and rheological properties	(Nakhjavani et al., 2017)
<i>Carica papaya</i>	Ag	-	-	UV and FTIR	Colorimetric detection of mercury ions	(Firdaus et al., 2017)
<i>Cassia auriculata</i>	Ag	50–70	Spherical	UV, TEM, EDS, XRD and FTIR	Antibacterial activity	(Srinivasan et al., 2015)
<i>Cassia toral</i>	Ag	-	Spherical	UV, FTIR, TEM and XRD	Antimicrobial activity	(Shaikh et al., 2019)
<i>Catharanthus roseus</i>	Ag	35–55	Spherical	UV, XRD, FTIR, EDX and SEM	Antilarvicidal activity	(Rajagopal et al., 2015)
<i>Centella asiatic</i>	Ag	18–21	-	UV, XRD and TEM	Antibacterial activity	(Saikia et al., 2014)
<i>Centella asiatica</i>	Ag ₂ O	11–12	Spherical	UV, FTIR, XRD, SEM and EDAX	Antimicrobial and photocatalytic activity	(Rashmi et al., 2020)
<i>Chenopodium album</i>	Ag	10–30	Quasi-spherical	UV, TEM, XRD, EDX and FTIR	-	(Dwivedi & Gopal, 2010)
<i>Chrysanthemum indicum</i>	Ag	38–72	Spherical	UV, XRD, TEM and EDX	Antibacterial and cytotoxic activities	(Arokiyaraj et al., 2014)
<i>Chrysanthemum morifolium</i>	Ag	20–50	Spherical	UV, XRD, TEM and FTIR	Antibacterial activity	(He et al., 2013)
<i>Cinnamomum camphora</i>	Ag	55–80	Triangular & Spherical	UV, XRD, SEM, TEM, AFM and	-	(Huang et al., 2007)

FTIR						
<i>Cinnamom zeylan-icum</i>	Ag	8–20	Spherical	UV and TEM	-	(Saliem & Ibrahim, 2018)
<i>Citrus limon</i>	Ag	8–15	-	FTIR, UV, TEM, SEM and AFM	Antimicrobial activity	(Vankar & Shukla, 2012)
<i>Citrus sinensis</i>	Ag	91	Spherical	FTIR, UV, SEM, EDS and TEM	Antibacterial activity	(Awad et al., 2014)
<i>Clitoria ternatea</i>	Ag	10–50	Spherical	UV, XRD, FTIR and SEM	Antibacterial activity	(Krithiga et al., 2015)
<i>Corchorus olitorus</i>	Ag	-	-	UV and XRD	Antibacterial activity	(Eya’Ane Meva et al., 2017)
<i>Crocus sativus</i>	Ag	12–20	Spherical	UV, FTIR, XRD and TEM	Antibacterial activity	(Bagherzade et al., 2017)
<i>Cuminum cyminum</i>	Ag	3–20	Spherical	UV, SEM, FTIR and XRD	Biological activities	(Karamian & Kamalnejad, 2019)
<i>Cycas revoluta</i>	Ag	2–6	Spherical	XRD, TEM, UV and SAED	-	(Jha & Prasad, 2010)
<i>Cynara scolymus</i>	Ag	200–223	Spherical	SEM, EDX and FTIR	Cytotoxic activity	(Erdogan et al., 2019)
<i>Dalbergia sissoo</i>	Ag	5–55	Spherical	UV, XRD, FTIR and TEM	-	(Singh et al., 2012)
<i>Datura metel</i>	Ag	25–40	-	UV, FTIR and XRD	-	(Banupriya & Muthu, 2016)
<i>Datura stramonium</i>	Ag	15–20	Spherical	UV, XRD, TEM, EDAX and FTIR	Antibacterial activity	(Gomathi et al., 2017)
<i>Delonix elata</i>	Ag	40–90	Spherical	UV and SEM	Antioxidant and toxic activities	(Reddy, 2019)
<i>Desmodium triflorum</i>	Ag	5–20	Spherical	UV, HRTEM and XRD	Antimicrobial activity	(Ahmad et al., 2011)
<i>Eclipta prostrata</i>	Ag	2–6	Spherical	UV, FTIR, XRD and TEM	-	(Jha et al., 2009)
<i>Embllica officinalis</i>	Ag	10–20	Spherical	UV, FTIR, TEM and SAED	-	(Ankamwar et al., 2005)
<i>Eriobotrya japonica</i>	Ag	20	Spherical	UV, DLS, SEM, EDX, XRD and FTIR	Antibacterial activity	(Rao & Tang, 2017)
<i>Eucalyptus camaldulensis</i>	Ag	16–68	Spherical	UV, FTIR, XRD, SEM, EDX and DLS	Antioxidant activity	(Alghoraibia et al., 2019)
<i>Eucalyptus globulus</i>	Ag	30–36	Spherical	UV, XRD, HRTEM and FTIR		(Balamurugan & Saravanan, 2017)
<i>Eucalyptus leucocoxylon</i>	Ag	50	Spherical	XRD, SEM, TEM and UV	Antioxidant activity	(Rahimi-Nasrabadi et al., 2014)
<i>Eucalyptus oleosa</i>	Ag	21		SEM, EDX, DLS and FTIR		(Pourmortazavi et al., 2014)
<i>Excoecaria agallocha</i>	Ag	23–42	Spherical & Hexagonal	UV, XRD, FESEM and EDX	Antibacterial, antioxidant and cytotoxic activities	(Bhuvaneswari et al., 2017)
<i>Ficus benghalensis</i>	Ag ₂ O	42.7–51.4	Spherical	FTIR, UV, XRD and HRTEM	Antibacterial activity	(Manikandan et al., 2017)
<i>Ficus carica</i>	Ag	10–30	Spherical	UV, TEM, DLS and XRD	Antioxidant activity	(Kumar et al., 2016)
<i>Ficus religiosa</i>	Ag	5–50	Spherical	AFM, XRD, FTIR, FESEM, EDAX and TGA	-	(Saware & Venkataraman, 2014)
<i>Gmelina arborea</i>	Ag	8–32	Spherical	UV, TEM, SAED and EDX	Photocatalytic activity	(Saha et al., 2017)
<i>Helicteres isora</i>	Ag	8–20	Spherical	UV, TEM, DLS, XRD and FTIR	Antimicrobial activity	(Mapara et al., 2015)
<i>Hibiscus rosa-sinensis</i>	Ag	-	Spherical	UV and SEM	-	(Reveendran et al., 2016)

<i>Ipomoea batatas</i>	Ag	-	Spherical	FTIR, UV, XRD, FESEM and EDX	Antibacterial activity	(Joshi & Chhabra, 2019)
<i>Jatropha curcas</i>	Ag	15–50	Spherical	HRTEM, XRD and UV	-	(Bar et al., 2009)
<i>Juglans regia</i>	Ag	3–50	Spherical	UV, DLS, EDX, FTIR, XRD and TEM	Biological activities	(Abbasi et al., 2017)
<i>Justica adhatoda</i>	Ag	20–40	Spherical	UV, SEM, EDX and FTIR	-	(Bharathi et al., 2015)
<i>Lantana camara</i>	Ag	13	Spherical	UV, FTIR and TEM	Antibacterial activity	(Sivakumar et al., 2012)
<i>Lawsonia inermis</i>	Ag	50	Spherical	UV, AFM and FTIR	Solar cell	(S.C.G. Kiruba Daniel et al., 2013)
<i>Lens culinaris</i>	Ag	5–25	Spherical	ICP, XRD and TEM	Antibacterial activity	(Shams et al., 2014)
<i>Lycium barbarum</i>	Ag	3–15	Spherical	UV, TEM and XRD		(Dong et al., 2017)
<i>Macrotyloma uniflorum</i>	Ag	12	Spherical	XRD, TEM, UV and FTIR		(Vidhu et al., 2011)
<i>Melia azedarach</i>	Ag	34–48	Spherical	UV, SEM and EDX	Antibacterial activity	(Mehmood et al., 2017)
<i>Melia dubia</i>	Ag	5–35	Spherical	UV, XRD and SEM-EDS	Cytotoxic activity	(Kathiravan et al., 2014)
<i>Memecylon edule</i>	Ag	50–90	Cubic	UV, SEM, TEM, EDAX and FTIR		(Elavazhagan & Arunachalam, 2011)
<i>Mentha piperita</i>	Ag	20–50	Spherical, triangular, hexagonal & irregular	FTIR, UV, AFM, TEM and DLS	Antibacterial activity	(Gabriela et al., 2017)
<i>Mimusops elengi</i>	Ag	55–83	Spherical	UV, FTIR and SEM	Antibacterial activity	(Prakash et al., 2013)
<i>Morinda citrifolia</i>	Ag	100		UV	Antimicrobial activity	(Pai et al., 2015)
<i>Musa balbisiana</i>	Ag	200	Spherical	UV, DLS, SEM, TEM, EDS and FTIR	Antimicrobial and toxic activities	(Banerjee et al., 2014)
<i>Musa paradisiaca</i>	Ag	23.7	Spherical	UV, TEM, FESEM, EDX, XRD and FTIR	Antimicrobial activity	(Ibrahim, 2015)
<i>Nelumbo nucifera</i>	Ag	45	Spherical & Triangular	UV, SEM, TEM, XRD and FTIR	Antilarvicidal activity	(Santhoshkumar et al., 2011)
<i>Nerium oleander</i>	Ag	10–40		UV, FTIR and SEM		(Bharathi, 2017)
<i>Ocimum sanctum</i>	Ag	14.6	Spherical	PL, FTIR, XRD and TEM	Antibacterial activity	(Jain & Mehata, 2017)
<i>Ocimum tenuiflorum</i>	Ag	200	Cubic	UV, DLS, SEM, TEM, EDS and FTIR	Antimicrobial and toxic activities	(Banerjee et al., 2014)
<i>Olea europaea</i>	Ag	10–30	Cubic	UV, SEM, XRD, AAS and FTIR	Antibacterial activity	(M. Awwad et al., 2013)
<i>Vaccinium oxycoccus</i>	Ag	1.4–8.6	Spherical	TEM, Zeta potential, UV and FTIR	Antimicrobial activity	(Ashour et al., 2015)
<i>Parthenium hysterophorus</i>	Ag	5–25	-	UV, PSA and FTIR	Antibacterial and antioxidant activities	(Kalaiselvi et al., 2013)
<i>Pelargonium hortorum</i>	Ag	25–150	Spherical	DLS, Zeta potential, UV, FTIR and STEM	-	(Rivera-Rangel et al., 2018)
<i>Phoenix dactylifera</i>	Ag	14–30	Spherical	UV, SEM, HRTEM and DLS	Antibacterial activity	(Ansari & Alzohairy, 2018)
<i>Phyllanthus niruri</i>	Ag	15	Cubic, rectangular, triangular and spherical	UV, FTIR and SEM	Antibacterial activity	(Amalorpavamary et al., 2019)
<i>Pinus longifolia</i>	Ag ₂ O	-	Triangular &	UV and SEM	Antibacterial activity	(Lawrence, 2015)

Spherical						
<i>Piper betle</i>	Ag	-	-	UV and FTIR	Antibacterial activity	(Praba et al., 2016)
<i>Piper pedicellatum</i>	Ag	3–30	Spherical	TEM, XRD, UV and HRTEM	Photocatalytic activity	(Tamuly, Hazarika, Bordoloi, et al., 2013)
<i>Pistacia atlantica</i>	Ag	50	Spherical	UV, XRD, TEM, SEM and EDX	Antibacterial activity	(Golabiazar et al., 2019)
<i>Poaceae</i>	Ag	15	Spherical	UV, XRD and TEM	Antibacterial, antifungal and cytotoxic activities	(Khatami et al., 2018)
<i>Pongamia pinnata</i>	Ag	20–50	Spherical	UV, XRD, TEM and FTIR	Antibacterial activity	(Raut et al., 2010)
<i>Premna serratifolia</i>	Ag	23	Cubic	SEM, FTIR and XRD	Cytotoxic activity	(Arockia John Paul et al., 2015)
<i>Prunus armeniaca</i>	Ag	5–40	Spherical	UV, FTIR, SEM, EDX, XRD and AA	Antibacterial activity	(Islam, Amin, et al., 2019)
<i>Prunus japonica</i>	Ag	24	Spherical, hexagonal & irregular	UV, HRTEM, SEM, EDS, XRD and FTIR	Antibacterial and antioxidant activities	(Saravanakumar et al., 2017)
<i>Prunus persica</i>	Ag	40–98	Spherical	FESEM, UV and XRD	Antimicrobial and catalytic activities	(R. Kumar et al., 2017)
<i>Psidium guajava</i>	Ag	-	-	EDX	Antibacterial activity	(Venugopal, 2017)
<i>Quercus brantii</i>	Ag	6	Spherical	TEM, DLS and AAS	-	(Korbekandi et al., 2015)
<i>Quercus macrocarpa</i>	Ag	40	Spherical	UV, FTIR, XRD, DLS, TEM and SEM	Cytotoxic activity	(Heydari & Rashidipour, 2015)
<i>Rheum palmatum</i>	Ag	121	Spherical & Hexagonal	UV, XRD, SEM, EDAX, EDS, HRTEM, Zeta potential and FTIR	Antibacterial activity	(Arokiyaraj et al., 2017)
<i>Rosa rugosa</i>	Ag	12	Spherical	UV, TEM, XRD, FTIR, Zeta potential and EDX	-	(S. Dubey et al., 2010)
<i>Rubus glaucus</i>	Ag	12–50	Spherical	UV, TEM, DLS, XRD and FTIR	Antioxidant activity	(B. Kumar et al., 2017)
<i>Rumex hymenosepalus</i>	Ag	2–40	Cubic & Hexagonal	UV, HRTEM and FTIR	-	(Rodríguez-León et al., 2013)
<i>Salvia spinosa</i>	Ag	19–125	Spherical	UV, XRD, FESEM, DLS and FTIR	Antibacterial activity	(Pirtarighat et al., 2019)
<i>Securinega leucopyrus</i>	Ag	11–20	Spherical & Oval	UV, FTIR, TEM and SEM	Antibacterial activity	(Rao Kudle et al., 2013)
<i>Sesuvium portulacastrum</i>	Ag	5–20	Spherical	XRD, FTIR and TEM	Antimicrobial activity	(Nabikhan et al., 2010)
<i>Sida acuta</i>	Ag	16	Spherical	UV, FTIR, XRD and TEM	Antibacterial activity and corrosion inhibition potential	(Idrees et al., 2019)
<i>Solanum lycopersicum</i>	Ag	-	Spherical	UV, TEM and XRD	Insecticidal activity	(Bhattacharyya et al., 2016)
<i>Solanum nigrum</i>	Ag	4–25	Spherical	UV, FTIR, SEM and TEM	Antidiabetic activity	(Sengottaiyan et al., 2016)
<i>Solanum trico-batum</i>	Ag	12.5–41.9	Spherical	UV, FTIR, SEM, TEM, EDX and XRD	Antibacterial and cytotoxic activities	(Ramar et al., 2015)
<i>Solanum tuberosum</i>	Ag	10	Spherical	UV, PL, DLS, CD, FTIR and TEM	Effect on human serum albumin	(M. S. Ali et al., 2017)
<i>Sphagneticola Trilobata</i>	Ag	22–26	Spherical	UV, FTIR, XRD and SEM	Antibacterial activity	(Vinay et al., 2018)
<i>Syzygium aro-</i>	Ag	5–40	Spherical	FTIR, TEM, UV	Cytotoxic activity	(Venugopal et al., 2017)

<i>maticum</i>				and EDX		
<i>Syzygium cumini</i>	Ag	93	Cubic	UV, SEM, EDX, XRD and FTIR	Antioxidant activity	(Banerjee & Narendhirakannan, 2011)
<i>Tagetes erecta</i>	Ag	10–90	Spherical, hexagonal & irregular	UV, FTIR, XRD, TEM and EDX	Antimicrobial activity	(Padalia et al., 2015)
<i>Taxus baccata</i>	Ag	15–50	Cubic	FESEM, UV, FTIR and XRD	-	(Asadi et al., 2018)
<i>Tecoma stans</i>	Ag	2–40	Spherical	UV, FTIR, XRD, EDX and TEM	Photocatalytic and antimicrobial activities	(Biswas & Rokhum, 2018)
<i>Tectona grandis</i>	Ag	10–30	Spherical	UV, XRD, FTIR, SEM/EDS, FESEM and TEM	Antimicrobial activity	(Rautela et al., 2019)
<i>Tephrosia purpurea</i>	Ag	20	Spherical	SAED, XRD, FTIR, SEM, TEM and PL	Antimicrobial activity	(Ajitha et al., 2014)
<i>Terminalia arjuna</i>	Ag	5.2	Spherical & Irregular	UV, DLS, TEM and FTIR	Antibacterial activity	(Ikram & Ahmed, 2015)
<i>Thevetia peruviana</i>	Ag	10–30	Spherical	UV, FTIR, SEM-EDS, XRD and HRTEM	-	(Nyoman Rupiasih et al., 2013)
<i>Trachyspermum ammi</i>	Ag	87	Triangular	UV and HRSEM	-	(Vijayaraghavan et al., 2012)
<i>Tribulus terrestris</i>	Ag	16–28	Spherical	TEM, AFM, XRD, FTIR and UV	Antimicrobial activity	(Gopinath et al., 2012)
<i>Tridax procumbens</i>	Ag ₂ O	11–12	Spherical	XRD, SEM, EDAX, FTIR and UV	Antimicrobial and photocatalytic activity	(Rashmi et al., 2020)
<i>Vaccinium oxycoccus</i>	Ag	1.4–8.6	Spherical	TEM, Zeta potential, UV and FTIR	Antimicrobial activity	(Ashour et al., 2015)
<i>Vitex negundo</i>	Ag	56	Spherical	UV, FTIR, XRD and SEM	Antibacterial activity	(Gunasekaran et al., 2013)
<i>Vitis vinifera</i>	Ag	19	Spherical	UV, DLS, EDX and TEM	Antibacterial activity	(Roy et al., 2013)
<i>Zingiber officinale</i>	Ag	10	Spherical	FTIR, HRTEM, HRSEM, SAED and EDX	Antibacterial activity	(Vijaya et al., 2017)
<i>Ziziphora tenuior</i>	Ag	20	Spherical	FTIR, UV, XRD, TEM, SEM and EDAX	-	(Sadeghi & Gholamhoseinpour, 2015)

Table S14. The Plant-Mediated Synthesis of Platinum Nanoparticles.

Plant Species	Nano-particle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Alchornea laxiflora</i>	Pt	3.68–8.77	Cubic	UV, FTIR, HRTEM, EDX and XRD	Oxidative desulphurisation of model oil	(Olajire et al., 2017)
<i>Anacardium occidentale</i>	Pt	-	Irregular Rods	UV, FTIR and TEM	Catalytic and thermal activities	(Sheny et al., 2013)
<i>Antigonon leptopus</i>	Pt	5–190	Spherical	UV, FTIR, SEM-EDAX, TEM and XRD	-	(Ganaie et al., 2018)
<i>Azadirachta indica</i>	Pt	5–50	Spherical	UV, TEM and FTIR	-	(Thirumurugan et al., 2016)
<i>Bacopa monnieri</i>	Pt	5–20	Spherical	UV, FTIR, TEM and EDX	Neuro-rescue effect on experimental parkinsonism in zebrafish	(Nellore et al., 2013)
<i>Barleria prionitis</i>	Pt	1–2		UV, HRTEM, EDS,	Cytotoxic activity	(Rokade et al., 2017)

DLS and FTIR						
<i>Bidens Tripartitus</i>	Pt	4	Irregular Rods	UV, FTIR, SEM-EDS, TEM and AFM	-	(Dobrucka, 2016)
<i>Cacumen platycladi</i>	Pt	3	Spherical	ICP, FTIR, TEM and XRD	-	(Zheng et al., 2013)
<i>Camellia sinensis</i>	Pt	2–4	Spherical	UV, TEM, FTIR, TGA and EDX	Photocatalytic activity	(Khalil et al., 2014)
<i>Carica papaya</i>	Pt	4.17–13.23	Spherical	UV, HRTEM, FTIR and SEM-EDX	-	(Olajire & Adesina, 2017)
<i>Cerbera manghas</i>	Pt	9.6–11.7	Spherical	FTIR, TEM and XRD	Antibacterial activity	(Rajathi & Nambaru, 2014)
<i>Citrus aurantium</i>	Pt	60	Nanowires	UV and TEM	Catalytic and antimicrobial activities	(Castro et al., 2015)
<i>Cochlospermum gossypium</i>	Pt	2.4	Spherical	SEM-EDAX, UV, XRD, FTIR and TEM	-	(Vinod et al., 2011)
<i>Croton caudatus geisel</i>	Pt	10	Spherical	UV, FTIR, XRD, SEM-EDX and TEM	Biological activities	(Kumar & Kala, 2018)
<i>Curcuma longa</i>	Pt	-	-	UV, SEM-EDX and FTIR	Catalytic activity	(Sahin & Gubbuk, 2019)
<i>Doipyros kaki</i>	Pt	2–12	Spherical	UV, TEM, EDX, XRD, FTIR and ICP	-	(Song et al., 2010)
<i>Eichhornia crassipes</i>	Pt	3.74	Spherical	TEM, DLS, Zeta potential and FTIR	-	(Anyik & Oluwafemi, 2017)
<i>Fumariae herba</i>	Pt	30	Hexagonal & Pentagonal	UV, FTIR, TEM and SEM-EDS	Catalytic activity	(Dobrucka, 2019)
<i>Gloriosa superba</i>	Pt	10	Spherical	UV, HRTEM, EDS and DLS	Cytotoxic activity	(Rokade et al., 2018)
<i>Jatropha glandulifera</i>	Pt	100	Dodecahedron, Cubic & Spherical	UV, FTIR, FESEM and TEM	Antibacterial activity	(Jeyapaul et al., 2018)
<i>Jatropha gossypifolia</i>	Pt	20	Dodecahedron & Spherical	UV, FTIR, FESEM and TEM	Antibacterial activity	(Jeyapaul et al., 2018)
<i>Lantana camara</i>	Pt	35	Spherical	UV, SEM-EDAX, Raman and XRD	-	(Mavukkandy et al., 2016)
<i>Mentha x piperita</i>	Pt	54.3	Spherical	UV, XRD, FTIR, TM and EDX	Cytotoxic activity	(C. Yang et al., 2017)
<i>Ocimum sanctum</i>	Pt	2	Irregular	UV, FTIR, XRD, SEM and TEM	-	(Prabhu & Gajendran, 2017)
<i>Phoenix dactylifera</i>	Pt	1.3–2.6	Spherical	FTIR, XRD, SEM-EDX, TGA, UV and TEM	Cytotoxic activity	(Al-Radadi, 2019)
<i>Prunus x yedoensis</i>	Pt	10–50	Oval and Spherical	UV, XRD, FTIR and TEM	Antifungal activity	(Velmurugan et al., 2016)
<i>Punica granatum</i>	Pt	20–100	Spherical	UV, TEM, XRD, FESEM and FTIR	Cytotoxic activity	(Şahin et al., 2018)
<i>Quercus glauca</i>	Pt	5–15	Spherical	UV, FTIR, TEM and XRD	Electrochemical oxidation of hydrazine in water	(Karthik et al., 2016)
<i>Sapindus mukorossi</i>	Pt	2–19	Spherical	TEM, XRD, SEM and EDS	-	(M. N. Kumar et al., 2017)
<i>Taraxacum laevigatum</i>	Pt	2–7	Spherical	UV, XRD, TEM, SEM, EDX, DLS and FTIR	Antibacterial activity	(Tahir et al., 2017)
<i>Terminalia chebula</i>	Pt	4	Cubic & Spherical	HRTEM, SAED, EDAX and XRD	-	(Kumar et al., 2013)

<i>Xanthium strumarium</i>	Pt	22	Cubic & Rectangular	UV, FTIR, XRD, SEM-EDAX and TEM	Biological activities	(Kumar et al., 2019)
<i>Zingiber officinale</i>	Pt	-	-	UV, SEM-EDX and FTIR	Catalytic activity	(Sahin & Gubbuk, 2019)

Table S15. The Plant-Mediated Synthesis of Gold Nanoparticles.

Plant Species	Nanoparticle	Particle Size (nm)	Morphology	Characterisation	Application	Reference
<i>Acer pentapomium</i>	Au	19–24	Spherical	UV, SEM, EDX, XRD and FTIR	Antibacterial, antifungal and antioxidant activities	(Khan et al., 2018)
<i>Achillea eriohora</i>	Au	56	Spherical	UV, XRD and SEM	-	(Elia et al., 2014)
<i>Aerva lantana</i>	Au	18	Spherical	UV, FTIR, XRD and HRTEM	Catalytic activity	(Siby & Beena, 2015)
<i>Allium cepa</i>	Au	100	Cubic & Spherical	UV, XRD, SEM and TEM	-	(Parida et al., 2011)
<i>Aloe vera</i>	Au	441	Spherical	UV, XRD and PSA	-	(Muralikrishna et al., 2014)
<i>Ampelopsis grossedentata</i>	Au	-	Spherical	UV and TEM	-	(Qing-Quan et al., 2016)
<i>Anacardium occidentale</i>	Au	10–30	Spherical	UV, TEM, FTIR and XRD	Cytotoxic and antimicrobial activities	(Sunderam et al., 2019)
<i>Annona muricata</i>	Au	25.5	Spherical	UV, TEM and FTIR	Antimicrobial activity	(Folorunso et al., 2019)
<i>Anthriscus sylvestris</i>	Au	18	Spherical	UV, XRD and SEM	-	(Elia et al., 2014)
<i>Artocarpus heterophyllus</i>	Au	20–25	Spherical	UV, SEM and FTIR	Antimicrobial activity	(Basavegowda et al., 2015)
<i>Aspalathus hispida</i>	Au	34	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Aspalathus linearis</i>	Au	61	Hexagonal	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Asparagus rubicundus</i>	Au	28	Triangular & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Azadirachta indica</i>	Au	25–30	Spherical	AFM, TEM, UV and FTIR	Antimicrobial activity	(Rao et al., 2017)
<i>Berberis vulgaris</i>	Au	5–15	Spherical	UV, TEM and XRD	-	(Abootorabi et al., 2016)
<i>Cacumen platycladi</i>	Au	15	Spherical	UV, XRD, TEM and TGA	-	(Zhan et al., 2011)
<i>Camellia japonica</i>	Au	20	Spherical	UV, FTIR, XRD and SEM	Antimicrobial activity	(T. S. K. Sharma et al., 2019)
<i>Camellia sinensis</i>	Au	10	-	UV and TEM	-	(Banoee et al., 2010)
<i>Cassia auriculata</i>	Au	15–25	Triangular & Spherical	UV, TEM, XRD, SEM-EDAX and FTIR	-	(Ganesh Kumar et al., 2011)
<i>Chenopodium album</i>	Au	10–30	Quasi-spherical	TEM, XRD, UV, EDX and FTIR	-	(Dwivedi & Gopal, 2010)
<i>Chenopodium formosanum</i>	Au	8	Spherical	HRTEM, SAED, EDS, XRD and FTIR	Antibacterial activity	(Chen et al., 2019)
<i>Cicer arietinum</i>	Au	25	Triangular	UV, TEM, EDS, XRD, XPS, FTIR and ESI-MS	-	(Ghule et al., 2006)
<i>Cinnamomum camphora</i>	Au	55–80	Spherical	UV, XRD, TEM, SEM, AFM and FTIR	-	(Huang et al., 2007)
<i>Cinnamomum verum</i>	Au	55	-	UV, FESEM and DLS	-	(Sharma et al., 2017)
<i>Cinnamomum</i>	Au	25	Spherical	FTIR, HRTEM, SAED,	-	(Smitha et al., 2009)

<i>zeylanicum</i>				UV, XRD and PL		
<i>Citrus maxima</i>	Au	8–25	Spherical	UV, XRD, TEM and FTIR	Catalytic and anti-bacterial activity	(Yuan et al., 2017)
<i>Citrus sinensis</i>	Au	20–30	Spherical	AFM, TEM, UV and FTIR	Antimicrobial activity	(Rao et al., 2017)
<i>Coffea arabica</i>	Au	14.9	Spherical	UV, Zeta potential, DLS, FTIR, Raman, XRD and TEM	-	(Keijok et al., 2019)
<i>Coleus amboinicus</i>	Au	5–55	Polygonal	UV, XRD, TEM, FTIR and SAED	-	(Narayanan & Sakthivel, 2010)
<i>Corchorus olitorius</i>	Au	37–50	Quasi-spherical	UV, TEM, XRD, FTIR and TGA	Cytotoxic activity	(Ismail et al., 2018)
<i>Crocus sativus</i>	Au	5–10	Spherical	UV, TEM and XRD	-	(Abootorabi et al., 2016)
<i>Cymbopogon citratus</i>	Au	20–50	Triangular, Hexagonal, Rod & Spherical	FTIR, TEM, EDX and XRD	Antimalarial activity	(Murugan et al., 2015)
<i>Cynanchum africanum</i>	Au	99	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Dicerotheramnus rhinocertis</i>	Au	63	Hexagonal	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Diospyros kaki</i>	Au	5–300	Spherical	ICP, EDS, SEM, TEM, AFM, XPS, PSA and FTIR	-	(Song et al., 2009)
<i>Emblica officianalis</i>	Au	15–25	Triangular & Decahedral	UV, FTIR and TEM	-	(Ankamwar et al., 2005)
<i>Eriocephalus africanus</i>	Au	102	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Eucalyptus globulus</i>	Au	13–42	Spherical	UV, TEM, EDS and FTIR	-	(Dzimitrowicz et al., 2019)
<i>Eucommia ulmoides</i>	Au	18	Spherical	UV, HRTEM, EDX, XRD, DLS and Zeta potential	Catalytic activity	(Guo et al., 2015)
<i>Euphorbia hirta</i>	Au	6–71	Spherical	TEM, XRD, EDAX, AFM, PSA, FTIR and Raman	Antimicrobial activity	(Annamalai et al., 2013)
<i>Ferula gummosa</i>	Au	30	Spherical	UV, XRD and SEM	-	(Elia et al., 2014)
<i>Garcinia combogia</i>	Au	40–50	-	UV, XRD, FTIR and SEM	Antibacterial and antibiofilm activity	(Nithya, 2016)
<i>Garcinia mangostana</i>	Au	33	Spherical	UV, XRD and TEM	-	(Xin Lee et al., 2016)
<i>Gnidia glauca</i>	Au	10	Spherical	HRTEM, DLS, XRD and FTIR	Chemocatalytic activity	(Ghosh et al., 2012)
<i>Gymnocladus assamicus</i>	Au	5–23	Hexagonal, Pentagonal & Triangular	UV, XRD and TEM	Antibacterial activity	(Tamuly, Hazarika, Debnath, et al., 2013)
<i>Hermannia alnifolia</i>	Au	66	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Hibiscus rosa sinensis</i>	Au	14	Triangular, Hexagonal, Dodecahedral & Spherical	UV, TEM, XRD and FTIR	-	(Philip, 2010a)
<i>Hibiscus sabdariffa</i>	Au	7	Spherical	UV, XRD, TEM, FESEM, EDX, Zeta potential and FTIR	Electrooxidation of nitrite	(Mohd Taib et al., 2019)
<i>Hypericum hookerianum</i>	Au	34–61	-	UV, SEM-EDX and FTIR	Antiparkinson activity	(Subakanmani et al., 2015)
<i>Indigofera brachystachya</i>	Au	100	Hexagonal	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Lantana camara</i>	Au	11–32	Spherical	XRD, FTIR, HRTEM and EDX	Antioxidant and cytotoxic activities	(Ramkumar et al., 2017)

<i>Lawsonia inermis</i>	Au	5–10	Spherical	UV, TEM, SEM-EDS, DLS and FTIR	Catalytic activity	(Abd El-Aziz et al., 2018)
<i>Lippia citriodora</i>	Au	2.6–50	Pentagonal & Hexagonal	DLS, NTA, SEM, EDS, TEM, ICP-OES and Zeta potential	-	(Elia et al., 2014)
<i>Lobostemon glaber</i>	Au	136	Triangular & Hexagonal	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Macadamia integrifolia</i>	Au	50	Hexagonal, Triangular & Spherical	UV, XRD, SEM and EDS	Antimicrobial activity	(Dang et al., 2019)
<i>Macrotyloma uniflorum</i>	Au	14–17	Spherical	UV, TEM, XRD and FTIR	-	(Aromal et al., 2012)
<i>Magnolia kobus</i>	Au	100–300	Spherical	SEM and UV	-	(Li et al., 2012)
<i>Mangifera indica</i>	Au	17	Spherical	UV, TEM and XRD	-	(Philip, 2010b)
<i>Medicago sativa</i>	Au	30–60	Triangular, Decahedral & Icosahedral	SEM, TEM, AFM and SAED	-	(Montes et al., 2011)
<i>Melissa officinalis</i>	Au	20	Triangular & Spherical	UV, DLS, FTIR, SEM and TEM	-	(Dzimitrowicz et al., 2019)
<i>Mentha piperita</i>	Au	34	Spherical	GC-MS, UV, FESEM, DLS and FTIR	-	(Jafarizad et al., 2015)
<i>Metalasia muricata</i>	Au	61	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Mimosa tenuiflora</i>	Au	20–200	Hexagonal & Spherical	Zeta potential, FTIR, XPS, TEM, UV and XRD	Assessment of cytotoxicity, cellular uptake and catalysis	(Rodríguez-León et al., 2019)
<i>Mimusops elengi</i>	Au	9–14	Spherical	HRTEM, UV, EDX and XRD	Catalytic activity	(Majumdar et al., 2016)
<i>Momordica cochinchinensis</i>	Au	10–80	Triangular, Oval & Spherical	UV, FTIR, XRD, TEM and EDX	Anticoagulative and photocatalytic activities	(B. Paul et al., 2016)
<i>Morinda citrifolia</i>	Au	12–33	Spherical	UV, XRD, FTIR, FESEM, EDX and TEM	-	(Suman et al., 2014)
<i>Mucuna pruriens</i>	Au	6–18	Spherical	UV, FTIR, TEM and XRD	-	(Arulkumar & Sabesan, 2010)
<i>Murraya koenigi</i>	Au	20–40	Spherical	UV, FTIR, TEM, TGA and XRD	-	(Alam et al., 2014)
<i>Nauclea latifolia</i>	Au	7	Spherical	UV, EDX, DLS and TEM	-	(Dozie-Nwachukwu et al., 2015)
<i>Nepenthes khasiana</i>	Au	50–80	Spherical	UV, SEM, XRD, FTIR and TEM	Antimicrobial activity	(Bhau et al., 2015)
<i>Nerium oleander</i>	Au	20–40	Spherical	UV, PRS, HRTEM, XRD and DLS	Cytotoxic and catalytic activity	(Barai et al., 2018)
<i>Nidorella foetida</i>	Au	97	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Nigella arvensis</i>	Au	3–37	Spherical	UV, XRD, FTIR and TEM	Antibacterial, antioxidant, cytotoxic and catalytic activities	(Chahardoli et al., 2018)
<i>Nyctanthes arboristis</i>	Au	20	Spherical	UV, TEM, XRD, FTIR and NMR	-	(Das et al., 2011)
<i>Ocimum sanctum</i>	Au	1–100	Spherical	TEM, UV and XRD	-	(Lee et al., 2016)
<i>Ocimum tenuiflorum</i>	Au	25–30	Spherical	AFM, TEM, UV and FTIR	Antimicrobial activity	(Rao et al., 2017)
<i>Otholobium bracteolatum</i>	Au	53	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)
<i>Papaver somniferum</i>	Au	77	Spherical	UV, SEM and FTIR	-	(Muhammad et al., 2017)
<i>Pelargonium cit-</i>	Au	33.8	Polygonal, Triangu-	GC-MS, UV, FESEM,	-	(Jafarizad et al., 2015)

ronellum		lar & Spherical		DLS and FTIR			
<i>Pelargonium graveolens</i>	Au	6–78	-	DLS, NTA, SEM, EDS, TEM, ICP-OES and Zeta potential	-	(Elia et al., 2014)	
<i>Pelargonium zonale</i>	Au	8–20	Spherical	UV, TEM, EDS and FTIR	-	(Franco-Romano et al., 2014)	
<i>Periploca Aphylla</i>	Au	25–30	Spherical	UV, TEM, XRD and FTIR	-	(Kaykhahi et al., 2018)	
<i>Phyllanthus amarus</i>	Au	65–99	Cubic & Spherical	UV, SEM, XRD, EDX, AFM, PSA and FTIR	-	(Annamalai et al., 2011)	
<i>Piper longum</i>	Au	56	Spherical	UV, TEM-EDX, DLS and TGA	Antioxidant and catalytic activities	(Nakkala et al., 2016)	
<i>Piper nigrum</i>	Au	55	Rectangular	UV, FESEM and DLS	-	(Sharma et al., 2017)	
<i>Pistacia integerima</i>	Au	20–200	-	UV, FTIR and SEM	Biological activities	(Islam, Jalil, et al., 2019)	
<i>Podocarpus falcatus</i>	Au	102	Pentagonal	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)	
<i>Podocarpus latifolius</i>	Au	54	Pentagonal & Hexagonal	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)	
<i>Pogestemon benghalensis</i>	Au	10–50	Triangular & Spherical	UV, XRD, TEM and FTIR	Photocatalytic activity	(Paul et al., 2015)	
<i>Polyscias scutellaria</i>	Au	5–20	Cubic	UV, PSA, FTIR, TEM-SAED and XRD	Catalytic activity	(Yulizar et al., 2017)	
<i>Psidium guajava</i>	Au	15	Spherical	UV, XRD, TEM and FTIR	-	(Taha & Shamsuddin, 2013)	
<i>Punica granatum</i>	Au	34–312	Irregular	DLS, NTA, SEM, EDS, TEM, ICP-OES and Zeta potential	-	(Elia et al., 2014)	
<i>Pyrus pyrifolia</i>	Au	10–40	Spherical	UV, TEM, EDS, XRD and FTIR	-	(Ghodake & Lee, 2011)	
<i>Rhus coriaria</i>	Au	21	Spherical	UV, FTIR, TEM and Zeta potential	Antioxidant activity	(Shabestarian et al., 2017)	
<i>Rosa hybrida</i>	Au	10	Spherical, Triangular & Hexagonal	UV, FTIR, XRD, EDX, DLS and TEM	-	(Noruzi et al., 2011)	
<i>Rosa rugosa</i>	Au	11	Spherical	UV, TEM, XRD, FTIR, Zeta potential and EDX	-	(S. Dubey et al., 2010)	
<i>Rosmarinus officinalis</i>	Au	9–61	Spherical	UV, TEM, EDS and FTIR	-	(Dzimitrowicz et al., 2019)	
<i>Salvia africana-lutea</i>	Au	69	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)	
<i>Salvia officinalis</i>	Au	4–72	Triangular	DLS, NTA, SEM, EDS, TEM, ICP-OES and Zeta potential	-	(Elia et al., 2014)	
<i>Saraca indica</i>	Au	5–23	Polygonal	SPR, HRTEM, AFM, XRD and FTIR	Catalytic activity	(Dash et al., 2014)	
<i>Searsia dissecta</i>	Au	68	Triangular & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)	
<i>Senecio pubigerus</i>	Au	49	Hexagonal, Pentagonal & Spherical	DLS, HRTEM, EDX and UV	-	(Elbagory et al., 2016)	
<i>Sesbania drummondii</i>	Au	6–20	Spherical	ICP, TEM, XANES and EXAFS	Catalytic activity	(Sharma et al., 2007)	
<i>Solanum nigrum</i>	Au	50	Spherical	UV, DLS, Zeta potential, TEM, XRD and FTIR	Antioxidant and antibacterial activity	(Muthuvel et al., 2014)	
<i>Sorbus aucuparia</i>	Au	18	Triangular, Hexagonal & Spherical	TEM, UV, XRD, EDX and FTIR	-	(S. P. Dubey et al., 2010)	
<i>Stachys lavandulifolia</i>	Au	22–30	Triangular & Spherical	UV, FTIR, XRD, EDS, SEM and AFM	Catalytic activity	(Veisi et al., 2018)	

<i>Stevia rebaudiana</i>	Au	5–20	Spherical	UV, FTIR, XRD, SEM and TEM	-	(Sadeghi et al., 2015)
<i>Syzygium aromaticum</i>	Au	55	Cubic	UV, FESEM and DLS	-	(Sharma et al., 2017)
<i>Tabebula argentea</i>	Au	56	Spherical	SEM-EDX	Cytotoxic activity	(Vinay et al., 2017)
<i>Terminalia catappa</i>	Au	10–35	Spherical	UV, XRD, FTIR and TEM	-	(Ankamwar, 2010)
<i>Torreyia nucifera</i>	Au	8–42	Spherical	UV, TEM, XRD and FTIR	Cytotoxic activity	(Kalpana et al., 2013)
<i>Wedelia trilobata</i>	Au	10–50	Spherical	UV, XRD, FTIR, TEM-EDX and SAED	Cytotoxic activity	(Dey et al., 2018)
<i>Zea mays</i>	Au	30	Spherical	UV, FTIR, SEM, TEM and EDAX	-	(Jon et al., 2019)
<i>Zingiber officinale</i>	Au	5–15	-	DLS, UV, FTIR and TEM	Blood compatibility	(Kumar et al., 2011)
<i>Ziziphus zizyphus</i>	Au	40–50	Triangular & Hexagonal	TEM, SEM, AFM, XRD, UV, EDX and TGA	Antimicrobial activity	(Aljabali et al., 2018)