

## REFERENCES

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- Agnihotri, S., Mukherji, S., and Mukherji, S. (2013). Immobilized silver nanoparticles enhance contact killing and show highest efficacy: elucidation of the mechanism of bactericidal action of silver. *Nanoscale*, 5(16), 7328-7340.
- Ahmad, A., Senapati, S., Khan, M. I., Kumar, R., Ramani, R., Srinivas, V., and Sastry, M. (2003). Intracellular synthesis of gold nanoparticles by a novel alkalotolerant actinomycete, *Rhodococcus* species. *Nanotechnology*, 14(7), 824.
- Ahmad, T., Wani, I. A., Manzoor, N., Ahmed, J., and Asiri, A. M. (2013). Biosynthesis, structural characterization and antimicrobial activity of gold and silver nanoparticles. *Colloids and Surfaces B: Biointerfaces*, 107, 227-234.
- Alanazi, F. K., Radwan, A. A., and Alsarra, I. A. (2010). Biopharmaceutical applications of nanogold. *Saudi Pharmaceutical Journal*, 18(4), 179-193.
- Albrecht, M. A., Evans, C. W., and Raston, C. L. (2006). Green chemistry and the health implications of nanoparticles. *Green chemistry*, 8(5), 417-432.
- Alvarez, R. A., Cortez-Valadez, M., Bueno, L. O. N., Hurtado, R. B., Rocha-Rocha, O., Delgado-Beleño, Y., . . . Flores-Acosta, M. (2016). Vibrational properties of gold nanoparticles obtained by green synthesis. *Physica E: Low-dimensional Systems and Nanostructures*, 84, 191-195.
- Anderson, M. L., Morris, C. A., Stroud, R. M., Merzbacher, C. I., and Rolison, D. R. (1999). Colloidal gold aerogels: Preparation, properties, and characterization. *Langmuir*, 15(3), 674-681.
- Antony-Babu, S., Stien, D., Eparvier, V., Parrot, D., Tomasi, S., and Suzuki, M. T. (2017). Multiple *Streptomyces* species with distinct secondary metabolomes have identical 16S rRNA gene sequences. *Scientific Reports*, 7(1), 11089.
- Arunachalam, K. D., Annamalai, S. K., and Hari, S. (2013). One-step green synthesis and characterization of leaf extract-mediated biocompatible silver and gold nanoparticles from *Memecylon umbellatum*. *International journal of nanomedicine*, 8, 1307-1315.

- Balagurunathan, R., Radhakrishnan, M., Rajendran, R. B., and Velmurugan, D. (2011). Biosynthesis of gold nanoparticles by actinomycete *Streptomyces viridogens* strain HM10. *Indian Journal of Biochemistry & Biophysics*, 48, 331-335.
- Bao, C., Jin, M., Lu, R., Zhang, T., and Zhao, Y. Y. (2003). Preparation of Au nanoparticles in the presence of low generational poly (amidoamine) dendrimer with surface hydroxyl groups. *Materials chemistry and physics*, 81(1), 160-165.
- Basu, S., Maji, P., and Ganguly, J. (2015). Biosynthesis, characterisation and antimicrobial activity of silver and gold nanoparticles by Dolichos biflorus Linn seed extract. *Journal of Experimental Nanoscience*, 11(8), 660-668.
- Bennur, T., Khan, Z., Kshirsagar, R., Javdekar, V., and Zinjarde, S. (2016). Biogenic gold nanoparticles from the Actinomycete *Gordonia amarae*: application in rapid sensing of copper ions. *Sensors and Actuators B: Chemical*, 233, 684-690.
- Bianconi, A. (1980). Surface X-ray absorption spectroscopy: Surface EXAFS and surface XANES. *Applications of Surface Science*, 6(3), 392-418.
- Bindhu, M., and Umadevi, M. (2014). Antibacterial activities of green synthesized gold nanoparticles. *Materials Letters*, 120, 122-125.
- Bisker, G., Yeheskely-Hayon, D., Minai, L., and Yelin, D. (2012). Controlled release of Rituximab from gold nanoparticles for phototherapy of malignant cells. *J Control Release*, 162(2), 303-309.
- Bosecker, K. (1997). Bioleaching: metal solubilization by microorganisms. *FEMS Microbiology reviews*, 20(3-4), 591-604.
- Bowman, M.-C., Ballard, T. E., Ackerson, C. J., Feldheim, D. L., Margolis, D. M., and Melander, C. (2008). Inhibition of HIV fusion with multivalent gold nanoparticles. *Journal of the American Chemical Society*, 130(22), 6896-6897.
- Brock, S. L. (2004). Nanostructures and Nanomaterials: Synthesis, Properties and Applications By Guozhang Cao (University of Washington). Imperial College Press (distributed by World Scientific): London. 2004. xiv+ 434 pp. \$78.00. ISBN 1-86094-415-9. In: ACS Publications.
- Bruins, M. R., Kapil, S., and Oehme, F. W. (2000). Microbial Resistance to Metals in the Environment. *Ecotoxicology and Environmental Safety*, 45(3), 198-207.

- Case, R. J., Boucher, Y., Dahllöf, I., Holmström, C., Doolittle, W. F., and Kjelleberg, S. (2007). Use of 16S rRNA and rpoB genes as molecular markers for microbial ecology studies. *Appl Environ Microbiol*, 73(1), 278-288. doi:10.1128/aem.01177-06.
- Chamundeeswari, M., Sobhana, S. S., Jacob, J. P., Kumar, M. G., Devi, M. P., Sastry, T. P., and Mandal, A. B. (2010). Preparation, characterization and evaluation of a biopolymeric gold nanocomposite with antimicrobial activity. *Biotechnol Appl Biochem*, 55(1), 29-35.
- Chater, K. F. (1993). Genetics of differentiation in Streptomyces. *Annual review of microbiology*, 47(1), 685-711.
- Chen, Y., Gu, X., Nie, C. G., Jiang, Z. Y., Xie, Z. X., and Lin, C. J. (2005). Shape controlled growth of gold nanoparticles by a solution synthesis. *Chem Commun (Camb)*(33), 4181-4183.
- Cheng, L., Li, X., and Dong, J. (2015). Size-controlled preparation of gold nanoparticles with novel pH responsive gemini amphiphiles. *Journal of Materials Chemistry C*, 3(24), 6334-6340.
- Chithrani, B. D., Ghazani, A. A., and Chan, W. C. (2006). Determining the size and shape dependence of gold nanoparticle uptake into mammalian cells. *Nano letters*, 6(4), 662-668.
- Chithrani, D. B., Dunne, M., Stewart, J., Allen, C., and Jaffray, D. A. (2010). Cellular uptake and transport of gold nanoparticles incorporated in a liposomal carrier. *Nanomedicine: Nanotechnology, Biology and Medicine*, 6(1), 161-169.
- Cho, E. C., Zhang, Q., and Xia, Y. (2011). The effect of sedimentation and diffusion on cellular uptake of gold nanoparticles. *Nature nanotechnology*, 6(6), 385-391.
- Clogston, J. D., and Patri, A. K. (2011a). Zeta potential measurement. In *Characterization of nanoparticles intended for drug delivery* (pp. 63-70): Springer.
- Clogston, J. D., and Patri, A. K. (2011b). Zeta potential measurement. *Methods Mol Biol*, 697, 63-70.

- Coenye, T., and Vandamme, P. (2003). Intragenomic heterogeneity between multiple 16S ribosomal RNA operons in sequenced bacterial genomes. *FEMS Microbiology Letters*, 228(1), 45-49.
- Cui, X., Liu, M., and Li, B. (2012). Homogeneous fluorescence-based immunoassay via inner filter effect of gold nanoparticles on fluorescence of CdTe quantum dots. *The Analyst*, 137, 3293-3299.
- Dahoumane, S. A., Wujcik, E. K., and Jeffries, C. (2016). Noble metal, oxide and chalcogenide-based nanomaterials from scalable phototrophic culture systems. *Enzyme and Microbial Technology*, 95, 13-27.
- Daniel, M.-C., and Astruc, D. (2004). Gold nanoparticles: assembly, supramolecular chemistry, quantum-size-related properties, and applications toward biology, catalysis, and nanotechnology. *Chemical reviews*, 104(1), 293-346.
- Das, M., Shim, K. H., An, S. S. A., and Yi, D. K. (2012). Review on gold nanoparticles and their applications. *Toxicology and Environmental Health Sciences*, 3(4), 193-205.
- Dhas, T. S., Kumar, V. G., Karthick, V., Govindaraju, K., and Narayana, T. S. (2014). Biosynthesis of gold nanoparticles using *Sargassum swartzii* and its cytotoxicity effect on HeLa cells. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*, 133, 102-106.
- Di Guglielmo, C., López, D. R., De Lapuente, J., Mallafre, J. M. L., and Suàrez, M. B. (2010). Embryotoxicity of cobalt ferrite and gold nanoparticles: a first in vitro approach. *Reproductive Toxicology*, 30(2), 271-276.
- Dreaden, E. C., Alkilany, A. M., Huang, X., Murphy, C. J., and El-Sayed, M. A. (2012). The golden age: gold nanoparticles for biomedicine. *Chemical Society Reviews*, 41(7), 2740-2779.
- Dykman, L., and Khlebtsov, N. (2011). Gold nanoparticles in biology and medicine: recent advances and prospects. *Acta Naturae* 3(2 (9)), 34-55.
- El-Batal, A. I., Hashem, A.-A. M., and Abdelbaky, N. M. (2013). Gamma radiation mediated green synthesis of gold nanoparticles using fermented soybean-garlic aqueous extract and their antimicrobial activity. *SpringerPlus*, 2(1), 1-10.

- El-Sayed, I. H., Huang, X., and El-Sayed, M. A. (2006). Selective laser photo-thermal therapy of epithelial carcinoma using anti-EGFR antibody conjugated gold nanoparticles. *Cancer letters*, 239(1), 129-135.
- Elavazhagan, T., and Arunachalam, K. D. (2011). Memecylon edule leaf extract mediated green synthesis of silver and gold nanoparticles. *International journal of nanomedicine*, 6, 1265.
- Eustis, S., and el-Sayed, M. A. (2006). Why gold nanoparticles are more precious than pretty gold: noble metal surface plasmon resonance and its enhancement of the radiative and nonradiative properties of nanocrystals of different shapes. *Chem Soc Rev*, 35(3), 209-217.
- Faraday, M. (1857). X. The Bakerian Lecture.—Experimental relations of gold (and other metals) to light. *Philosophical Transactions of the Royal Society of London*(147), 145-181.
- Galstyan, V., Bhandari, M. P., Sberveglieri, V., Sberveglieri, G., and Comini, E. (2018). Metal oxide nanostructures in food applications: Quality control and packaging. *Chemosensors*, 6(2), 16.
- Ganeshkumar, M., Sastry, T. P., Sathish Kumar, M., Dinesh, M. G., Kannappan, S., and Suguna, L. (2012). Sun light mediated synthesis of gold nanoparticles as carrier for 6-mercaptopurine: Preparation, characterization and toxicity studies in zebrafish embryo model. *Materials Research Bulletin*, 47(9), 2113-2119.
- Geethalakshmi, R., and Sarada, D. (2013). Characterization and antimicrobial activity of gold and silver nanoparticles synthesized using saponin isolated from Trianthema decandra L. *Industrial Crops and Products*, 51, 107-115.
- Giljohann, D. A., Seferos, D. S., Daniel, W. L., Massich, M. D., Patel, P. C., and Mirkin, C. A. (2010). Gold Nanoparticles for Biology and Medicine. *Angewandte Chemie International Edition*, 49(19), 3280-3294.
- Gopal, J. V., Thenmozhi, M., Kannabiran, K., Rajakumar, G., Velayutham, K., and Rahuman, A. A. (2013). Actinobacteria mediated synthesis of gold nanoparticles using Streptomyces sp. VITDDK3 and its antifungal activity. *Materials Letters*, 93, 360-362.

- Graily-Moradi, F., Maadani Mallak, A., and Ghorbanpour, M. (2020). Biogenic synthesis of gold nanoparticles and their potential application in agriculture. In *Biogenic Nano-Particles and their Use in Agro-ecosystems* (pp. 187-204): Springer.
- Grubbs, R. B. (2007). Solvent-tuned structures. *Nature Materials*, 6(8), 553-555.
- Guo, Q., Guo, Q., Yuan, J., and Zeng, J. (2014). Biosynthesis of gold nanoparticles using a kind of flavonol: Dihydromyricetin. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 441, 127-132.
- Hall, S. R., Shenton, W., Engelhardt, H., and Mann, S. (2001). Site-specific organization of gold nanoparticles by biomolecular templating. *ChemPhysChem*, 2(3), 184-186.
- Hassanisaadi, M., Bonjar, G. H. S., Rahdar, A., Pandey, S., Hosseinipour, A., and Abdolshahi, R. (2021). Environmentally Safe Biosynthesis of Gold Nanoparticles Using Plant Water Extracts. *Nanomaterials*, 11(8), 2033.
- Heidari, Z., Sariri, R., and Salouti, M. (2014). Gold nanorods-bombesin conjugate as a potential targeted imaging agent for detection of breast cancer. *Journal of Photochemistry and Photobiology B: Biology*, 130, 40-46.
- Henderson, G. S., De Groot, F. M., and Moulton, B. J. (2014). X-ray absorption near-edge structure (XANES) spectroscopy. *Reviews in Mineralogy and Geochemistry*, 78, 75-138.
- Horie, M., and Fujita, K. (2011). Toxicity of metal oxides nanoparticles. In *Advances in molecular toxicology* (Vol. 5, pp. 145-178): Elsevier.
- Hsueh, P.-R. (2010). New Delhi Metallo- $\beta$ -lactamase-1 (NDM-1): An Emerging Threat Among Enterobacteriaceae. *Journal of the Formosan Medical Association*, 109(10), 685-687.
- Hu, R., Zheng, M., Wu, J., Li, C., Shen, D., Yang, D., . . . Dong, W. (2017). Core-shell magnetic gold nanoparticles for magnetic field-enhanced radio-photothermal therapy in cervical cancer. *Nanomaterials*, 7(5), 111.
- Hu, X., Zhang, Y., Ding, T., Liu, J., and Zhao, H. (2020). Multifunctional Gold Nanoparticles: A Novel Nanomaterial for Various Medical Applications and Biological Activities. *Frontiers in Bioengineering and Biotechnology*, 8.

- Huang, X., and El-Sayed, M. A. (2010). Gold nanoparticles: Optical properties and implementations in cancer diagnosis and photothermal therapy. *Journal of Advanced Research*, 1(1), 13-28.
- Hunt, L. (1973). The early history of gold plating. *Gold Bulletin*, 6(1), 16-27.
- Ibrahim, N. A., Eid, B. M., and Abdel-Aziz, M. S. (2016). Green synthesis of AuNPs for eco-friendly functionalization of cellulosic substrates. *Applied Surface Science*, 389, 118-125.
- Jahangirian, H., Lemraski, E. G., Webster, T. J., Rafiee-Moghaddam, R., and Abdollahi, Y. (2017). A review of drug delivery systems based on nanotechnology and green chemistry: green nanomedicine. *International journal of nanomedicine*, 12, 2957.
- Jain, P. K., Lee, K. S., El-Sayed, I. H., and El-Sayed, M. A. (2006). Calculated absorption and scattering properties of gold nanoparticles of different size, shape, and composition: applications in biological imaging and biomedicine. *The journal of physical chemistry B*, 110(14), 7238-7248.
- Jeffery, J. W. (1971). Methods in X-ray Crystallography.
- Jiang, J., Oberdörster, G., and Biswas, P. (2009). Characterization of size, surface charge, and agglomeration state of nanoparticle dispersions for toxicological studies. *Journal of Nanoparticle Research*, 11(1), 77-89.
- Jin, R., Cao, Y., Mirkin, C. A., Kelly, K. L., Schatz, G. C., and Zheng, J. G. (2001). Photoinduced conversion of silver nanospheres to nanoprisms. *Science*, 294(5548), 1901-1903.
- Johnston, H. J., Hutchison, G., Christensen, F. M., Peters, S., Hankin, S., and Stone, V. (2010). A review of the in vivo and in vitro toxicity of silver and gold particulates: particle attributes and biological mechanisms responsible for the observed toxicity. *Crit Rev Toxicol*, 40(4), 328-346.
- Karthik, L., Kumar, G., Keswani, T., Bhattacharyya, A., Reddy, B. P., and Rao, K. V. (2013a). Marine actinobacterial mediated gold nanoparticles synthesis and their antimalarial activity. *Nanomedicine*, 9(7), 951-960.
- Karthik, L., Kumar, G., Keswani, T., Bhattacharyya, A., Reddy, B. P., and Rao, K. V. B. (2013b). Marine actinobacterial mediated gold nanoparticles synthesis and

- their antimalarial activity. *Nanomedicine: Nanotechnology, Biology and Medicine*, 9(7), 951-960.
- Khadivi Derakhshan, F., Dehnad, A., and Salouti, M. (2012). Extracellular biosynthesis of gold nanoparticles by metal resistance bacteria: *Streptomyces griseus*. *Synthesis and Reactivity in Inorganic, Metal-Organic, and Nano-Metal Chemistry*, 42(6), 868-871.
- Khalil, H., Mahajan, D., Rafailovich, M., Gelfer, M., and Pandya, K. (2004). Synthesis of zerovalent nanoparticle metal particles stabilized with poly (ethylene glycol). *Langmuir*, 20(16), 6896-6903.
- Khan, A. K., Rashid, R., Murtaza, G., and Zahra, A. (2014). Gold Nanoparticles: Synthesis and Applications in Drug Delivery. *Tropical Journal of Pharmaceutical Research*, 13(7).
- Khan, S. T., Komaki, H., Motohashi, K., Kozone, I., Mukai, A., Takagi, M., and Shin-ya, K. (2011). Streptomyces associated with a marine sponge *Haliclona* sp.; biosynthetic genes for secondary metabolites and products. *Environ Microbiol*, 13(2), 391-403.
- Kim, D., and Jon, S. (2012). Gold nanoparticles in image-guided cancer therapy. *Inorganica Chimica Acta*, 393, 154-164.
- Kim, F., Sohn, K., Wu, J., and Huang, J. (2008). Chemical synthesis of gold nanowires in acidic solutions. *Journal of the American Chemical Society*, 130(44), 14442-14443.
- Kim, H.-s., Seo, Y., Kim, K., Han, J. W., Park, Y., and Cho, S. (2016). Concentration Effect of Reducing Agents on Green Synthesis of Gold Nanoparticles: Size, Morphology, and Growth Mechanism. *Nanoscale research letters*, 11, 230.
- Kim, J. H., Jang, H. H., Ryou, S. M., Kim, S., Bae, J., Lee, K., and Han, M. S. (2010). A functionalized gold nanoparticles-assisted universal carrier for antisense DNA. *Chem Commun (Camb)*, 46(23), 4151-4153.
- Kim, M., and Chun, J. (2014). Chapter 4 - 16S rRNA Gene-Based Identification of Bacteria and Archaea using the EzTaxon Server. In M. Goodfellow, I. Sutcliffe, & J. Chun (Eds.), *Methods in Microbiology* (Vol. 41, pp. 61-74): Academic Press.

- Kojima, C., Umeda, Y., Harada, A., and Kono, K. (2010). Preparation of near-infrared light absorbing gold nanoparticles using polyethylene glycol-attached dendrimers. *Colloids and Surfaces B: Biointerfaces*, 81(2), 648-651.
- Kong, F. Y., Zhang, J. W., Li, R. F., Wang, Z. X., Wang, W. J., and Wang, W. (2017). Unique Roles of Gold Nanoparticles in Drug Delivery, Targeting and Imaging Applications. *Molecules*, 22(9).
- Konishi, Y., Tsukiyama, T., Saitoh, N., Nomura, T., Nagamine, S., Takahashi, Y., and Uruga, T. (2007). Direct determination of oxidation state of gold deposits in metal-reducing bacterium Shewanella algae using X-ray absorption near-edge structure spectroscopy (XANES). *Journal of Bioscience and Bioengineering*, 103(6), 568-571.
- Kshirsagar, P., Sangaru, S. S., Brunetti, V., Malvindi, M. A., and Pompa, P. P. (2014). Synthesis of fluorescent metal nanoparticles in aqueous solution by photochemical reduction. *Nanotechnology*, 25(4), 045601.
- Kumar, K. S., Kumar, G., Prokhorov, E., Luna-Bárcenas, G., Buitron, G., Khanna, V., and Sanchez, I. (2014). Exploitation of anaerobic enriched mixed bacteria (AEMB) for the silver and gold nanoparticles synthesis. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 462, 264-270.
- Lai, H.-Z., Chen, W.-Y., Wu, C.-Y., and Chen, Y.-C. (2015). Potent antibacterial nanoparticles for pathogenic bacteria. *ACS applied materials & interfaces*, 7(3), 2046-2054.
- Lane, D. (1991). 16S/23S rRNA sequencing. Nucleic acid techniques in bacterial systematics (Stackebrandt E & Goodfellow M, eds). In: Wiley, New York.
- Lee, J.-S., Green, J. J., Love, K. T., Sunshine, J., Langer, R., and Anderson, D. G. (2009). Gold, poly ( $\beta$ -amino ester) nanoparticles for small interfering RNA delivery. *Nano letters*, 9(6), 2402-2406.
- Lee, K. X., Shameli, K., Yew, Y. P., Teow, S.-Y., Jahangirian, H., Rafiee-Moghaddam, R., and Webster, T. J. (2020). Recent Developments in the Facile Bio-Synthesis of Gold Nanoparticles (AuNPs) and Their Biomedical Applications. *International journal of nanomedicine*, 15, 275-300.

- Li, L., Fan, M., Brown, R. C., Van Leeuwen, J., Wang, J., Wang, W., . . . Zhang, P. (2006). Synthesis, Properties, and Environmental Applications of Nanoscale Iron-Based Materials: A Review. *Critical Reviews in Environmental Science and Technology*, 36(5), 405-431.
- Li, W. R., Xie, X. B., Shi, Q. S., Zeng, H. Y., Ou-Yang, Y. S., and Chen, Y. B. (2010). Antibacterial activity and mechanism of silver nanoparticles on Escherichia coli. *Appl Microbiol Biotechnol*, 85(4), 1115-1122.
- Link, S., and El-Sayed, M. A. (1999). Size and temperature dependence of the plasmon absorption of colloidal gold nanoparticles. *The journal of physical chemistry B*, 103(21), 4212-4217.
- Liu, B., Xie, J., Lee, J., Ting, Y., and Chen, J. P. (2005). Optimization of high-yield biological synthesis of single-crystalline gold nanoplates. *The journal of physical chemistry B*, 109(32), 15256-15263.
- Liu, Y., Liu, Y., Mernaugh, R. L., and Zeng, X. (2009). Single chain fragment variable recombinant antibody functionalized gold nanoparticles for a highly sensitive colorimetric immunoassay. *Biosensors and Bioelectronics*, 24(9), 2853-2857.
- Magnusson, M. H., Deppert, K., Malm, J.-O., Bovin, J.-O., and Samuelson, L. (1999). Gold nanoparticles: production, reshaping, and thermal charging. *Journal of Nanoparticle Research*, 1(2), 243-251.
- Manivasagan, P., Venkatesan, J., Sivakumar, K., and Kim, S.-K. (2014). Pharmaceutically active secondary metabolites of marine actinobacteria. *Microbiological research*, 169(4), 262-278.
- Manivasagan, P., Venkatesan, J., Sivakumar, K., and Kim, S. K. (2016). Actinobacteria mediated synthesis of nanoparticles and their biological properties: A review. *Crit Rev Microbiol*, 42(2), 209-221.
- Menon, S., S, R., and S, V. K. (2017). A review on biogenic synthesis of gold nanoparticles, characterization, and its applications. *Resource-Efficient Technologies*, 3(4), 516-527.
- Michael Goodfellow, Peter Kämpfer, Hans-Jürgen Busse, Martha E. Trujillo, Ken-ichiro Suzuki, Wolfgang Ludwig, and Whitman, W. B. (2012). Bergey's Manual of

- Systematic Bacteriology, . Springer New York, NY, 5: *The Actinobacteria* (2nd edition).
- Mie, G. (1908). A contribution to the optics of turbid media, especially colloidal metallic suspensions. *Ann. Phys.*, 25(4), 377-445.
- Mishra, A., Tripathy, S. K., and Yun, S.-I. (2012). Fungus mediated synthesis of gold nanoparticles and their conjugation with genomic DNA isolated from *Escherichia coli* and *Staphylococcus aureus*. *Process Biochemistry*, 47(5), 701-711.
- Mittal, a. k., Kaler, A., Mulay, A., and Banerjee, U. (2013). Synthesis of Gold Nanoparticles Using Whole Cells of *Geotrichum candidum*. *Journal of Nanoparticles*, 2013.
- Mody, V. V., Siwale, R., Singh, A., and Mody, H. R. (2010). Introduction to metallic nanoparticles. *Journal of Pharmacy and Bioallied Sciences*, 2(4), 282.
- Mohanpuria, P., Rana, N. K., and Yadav, S. K. (2008). Biosynthesis of nanoparticles: technological concepts and future applications. *Journal of Nanoparticle Research*, 10(3), 507-517.
- Montes, M., Mayoral, A., Deepak, F., Parsons, J., Jose-Yacamán, M., Peralta-Videa, J., and Gardea-Torresdey, J. (2011). Anisotropic gold nanoparticles and gold plates biosynthesis using alfalfa extracts. *Journal of Nanoparticle Research*, 13(8), 3113-3121.
- Murawala, P., Tirmale, A., Shiras, A., and Prasad, B. (2014). In situ synthesized BSA capped gold nanoparticles: effective carrier of anticancer drug methotrexate to MCF-7 breast cancer cells. *Materials Science and Engineering: C*, 34, 158-167.
- Muthuvel, A., Adavallan, K., Balamurugan, K., and Narendran, d. n. k. (2014). Biosynthesis of gold nanoparticles using *Solanum nigrum* leaf extract and screening their free radical scavenging and antibacterial properties. *Biomedicine & Preventive Nutrition*, 4.
- Narayanan, K. B., and Sakthivel, N. (2010). Biological synthesis of metal nanoparticles by microbes. *Advances in colloid and interface science*, 156(1-2), 1-13.

- Ohyama, J., Teramura, K., Shishido, T., Hitomi, Y., Kato, K., Tanida, H., . . . Tanaka, T. (2011). In Situ Au L3 and L2 edge XANES spectral analysis during growth of thiol protected gold nanoparticles for the study on particle size dependent electronic properties. *Chemical Physics Letters*, 507(1-3), 105-110.
- Okitsu, K., Ashokkumar, M., and Grieser, F. (2005). Sonochemical synthesis of gold nanoparticles: effects of ultrasound frequency. *The journal of physical chemistry B*, 109(44), 20673-20675.
- Papasani, M. R., Wang, G., and Hill, R. A. (2012). Gold nanoparticles: the importance of physiological principles to devise strategies for targeted drug delivery. *Nanomedicine*, 8(6), 804-814.
- Park, T. J., Lee, S. Y., Lee, S. J., Park, J. P., Yang, K. S., Lee, K.-B., . . . Kim, S. K. (2006). Protein nanopatterns and biosensors using gold binding polypeptide as a fusion partner. *Analytical chemistry*, 78(20), 7197-7205.
- Peng, C., Xu, J., Yu, M., Ning, X., Huang, Y., Du, B., . . . Zheng, J. (2019). Tuning the in vivo transport of anticancer drugs using renal-clearable gold nanoparticles. *Angewandte Chemie*, 131(25), 8567-8571.
- Pileni, M. (1997). Nanosized particles made in colloidal assemblies. *Langmuir*, 13(13), 3266-3276.
- Pissuwan, D., Niidome, T., and Cortie, M. B. (2011). The forthcoming applications of gold nanoparticles in drug and gene delivery systems. *Journal of controlled release*, 149(1), 65-71.
- Poinern, G. E. J. (2014). *A laboratory course in nanoscience and nanotechnology*: CRC Press.
- Prakash, D., Mahale, V., Bankar, A., Nawani, N., Mahale, V., and Prakash, D. (2013). Biosynthesis of colloidal gold nanoparticles by Streptomyces sp. NK52 and its anti-lipid peroxidation activity. *Indian J Exp Biol*, 51(11), 969-972.
- Procópio, R. E. d. L., Silva, I. R. d., Martins, M. K., Azevedo, J. L. d., and Araújo, J. M. d. (2012). Antibiotics produced by Streptomyces. *Brazilian Journal of Infectious Diseases*, 16(5), 466-471.
- Ramalingam, V., Revathidevi, S., Shanmuganayagam, T., Muthulakshmi, L., and Rajaram, R. (2017). Gold nanoparticle induces mitochondria-mediated

- apoptosis and cell cycle arrest in nonsmall cell lung cancer cells. *Gold Bulletin*, 50(2), 177-189.
- Ranjitha, V. R., and Rai, V. R. (2017). Actinomycetes mediated synthesis of gold nanoparticles from the culture supernatant of *Streptomyces griseoruber* with special reference to catalytic activity. *3 Biotech*, 7(5), 299.
- Rau, R. (2005). Have traditional DMARDs had their day? Effectiveness of parenteral gold compared to biologic agents. *Clin Rheumatol*, 24(3), 189-202.
- Raval, N., Maheshwari, R., Kalyane, D., Youngren-Ortiz, S. R., Chougule, M. B., and Tekade, R. K. (2019). Chapter 10 - Importance of Physicochemical Characterization of Nanoparticles in Pharmaceutical Product Development. In R. K. Tekade (Ed.), *Basic Fundamentals of Drug Delivery* (pp. 369-400): Academic Press.
- Reller, L. B., Weinstein, M. P., and Petti, C. A. (2007). Detection and Identification of Microorganisms by Gene Amplification and Sequencing. *Clinical Infectious Diseases*, 44(8), 1108-1114.
- Ren, X., Song, Y., Liu, A., Zhang, J., Yang, P., Zhang, J., . . . Wu, G. (2015). Role of polyethyleneimine as an additive in cyanide-free electrolytes for gold electrodeposition. *Rsc Advances*, 5.
- Rice, L. B. (2010). Progress and challenges in implementing the research on ESKAPE pathogens. *Infection Control & Hospital Epidemiology*, 31(S1), S7-S10.
- Rinehart, and Winston. (2005). Chapter 4 Periodic Table. *Chapter 4 Periodic Table*.
- Rossi, A., Donati, S., Fontana, L., Porcaro, F., Battocchio, C., Proietti, E., . . . Fratoddi, I. (2016). Negatively charged gold nanoparticles as a dexamethasone carrier: stability in biological media and bioactivity assessment in vitro. *Rsc Advances*, 6(101), 99016-99022.
- Sadhasivam, S., Shanmugam, P., Veerapandian, M., Subbiah, R., and Yun, K. (2012). Biogenic synthesis of multidimensional gold nanoparticles assisted by *Streptomyces hygroscopicus* and its electrochemical and antibacterial properties. *Biometals*, 25(2), 351-360.
- Saitou, N., and Nei, M. (1987). The neighbor-joining method: a new method for reconstructing phylogenetic trees. *Mol Biol Evol*, 4(4), 406-425.

- Sapsford, K. E., Tyner, K. M., Dair, B. J., Deschamps, J. R., and Medintz, I. L. (2011). Analyzing nanomaterial bioconjugates: a review of current and emerging purification and characterization techniques. *Analytical chemistry*, 83(12), 4453-4488.
- Sathish Kumar, S. R., and Bhaskara Rao, K. V. (2016). Postprandial anti-hyperglycemic activity of marine *Streptomyces coelicoflavus* SRBVIT13 mediated gold nanoparticles in streptozotocin induced diabetic male albino Wister rats. *IET Nanobiotechnol*, 10(5), 308-314.
- Scaiano, J. C., Billone, P., Gonzalez, C. M., Marett, L., Marin, M. L., McGilvray, K. L., and Yuan, N. (2009). Photochemical routes to silver and gold nanoparticles. *Pure and Applied Chemistry*, 81(4), 635-647.
- Schaffer, B., Hohenester, U., Trügler, A., and Hofer, F. (2009). High-resolution surface plasmon imaging of gold nanoparticles by energy-filtered transmission electron microscopy. *Physical Review B*, 79(4), 041401.
- Shah, M., Badwaik, V., Kherde, Y., Waghwani, H. K., Modi, T., Aguilar, Z. P., . . . Webb, C. (2014). Gold nanoparticles: various methods of synthesis and antibacterial applications. *Front Biosci*, 19(8), 1320-1344.
- Shah, M., Badwaik, V. D., and Dakshinamurthy, R. (2014). Biological applications of gold nanoparticles. *Journal of nanoscience and nanotechnology*, 14(1), 344-362.
- Shah, M., Fawcett, D., Sharma, S., Tripathy, S. K., and Poinern, G. E. J. (2015). Green synthesis of metallic nanoparticles via biological entities. *Materials*, 8(11), 7278-7308.
- Shahzadi, S., Zafar, N., and Sharif, R. (2018). Antibacterial Activity of Metallic Nanoparticles. In *Bacterial Pathogenesis and Antibacterial Control*.
- Shaikh, S., Fatima, J., Shakil, S., Rizvi, S. M., and Kamal, M. A. (2015). Antibiotic resistance and extended spectrum beta-lactamases: Types, epidemiology and treatment. *Saudi J Biol Sci*, 22(1), 90-101.
- Shaikh, S., Shakil, S., Abuzenadah, M. A., Danish Rizvi, M. S., Roberts, M. P., Mushtaq, G., and Kamal, A. M. (2015). Nanobiotechnological Approaches Against

- Multidrug Resistant Bacterial Pathogens: An Update. *Current Drug Metabolism*, 16(5), 362-370.
- Shankar, S. S., Rai, A., Ahmad, A., and Sastry, M. (2004). Rapid synthesis of Au, Ag, and bimetallic Au core–Ag shell nanoparticles using Neem (*Azadirachta indica*) leaf broth. *Journal of colloid and interface science*, 275(2), 496-502.
- Shanmugasundaram, T., Radhakrishnan, M., Gopikrishnan, V., Pazhanimurugan, R., and Balagurunathan, R. (2013). A study of the bactericidal, anti-biofouling, cytotoxic and antioxidant properties of actinobacterially synthesised silver nanoparticles. *Colloids and Surfaces B: Biointerfaces*, 111, 680-687.
- Sharma, A., Sharma, S., Sharma, K., Chetri, S. P., Vashishtha, A., Singh, P., . . . Agrawal, V. (2016). Algae as crucial organisms in advancing nanotechnology: a systematic review. *Journal of applied phycology*, 28(3), 1759-1774.
- Sharma, V., Park, K., and Srinivasarao, M. (2009). Colloidal dispersion of gold nanorods: Historical background, optical properties, seed-mediated synthesis, shape separation and self-assembly. *Materials Science and Engineering: R: Reports*, 65(1-3), 1-38.
- Shaw, C. F. (1999). Gold-based therapeutic agents. *Chemical reviews*, 99(9), 2589-2600.
- Shnoudeh, A. J., Hamad, I., Abdo, R. W., Qadumii, L., Jaber, A. Y., Surchi, H. S., and Alkelany, S. Z. (2019). Chapter 15 - Synthesis, Characterization, and Applications of Metal Nanoparticles. In R. K. Tekade (Ed.), *Biomaterials and Bionanotechnology* (pp. 527-612): Academic Press.
- Shukla, A. K., and Iravani, S. (2017). Metallic nanoparticles: green synthesis and spectroscopic characterization. *Environmental Chemistry Letters*, 15(2), 223-231.
- Shukla, A. K., and Iravani, S. (2018). *Green synthesis, characterization and applications of nanoparticles*: Elsevier.
- Shukla, R., Bansal, V., Chaudhary, M., Basu, A., Bhonde, R. R., and Sastry, M. (2005). Biocompatibility of gold nanoparticles and their endocytotic fate inside the cellular compartment: a microscopic overview. *Langmuir*, 21(23), 10644-10654.

- Singh, R., Smitha, M. S., and Singh, S. P. (2014). The role of nanotechnology in combating multi-drug resistant bacteria. *J Nanosci Nanotechnol*, 14(7), 4745-4756.
- Składanowski, M., Wypij, M., Laskowski, D., Golińska, P., Dahm, H., and Rai, M. (2017). Silver and gold nanoparticles synthesized from *Streptomyces* sp. isolated from acid forest soil with special reference to its antibacterial activity against pathogens. *Journal of Cluster Science*, 28(1), 59-79.
- Slavin, Y. N., Asnis, J., Häfeli, U. O., and Bach, H. (2017). Metal nanoparticles: understanding the mechanisms behind antibacterial activity. *Journal of nanobiotechnology*, 15(1), 1-20.
- Soltani, M., N., Khatami, M., and Shahidi Bonjar, G. H. (2016). Extracellular synthesis gold nanotriangles using biomass of *Streptomyces microflavus*. *IET Nanobiotechnol*, 10(1), 33-38.
- Soltani, Meysam, N., Shahidi, B. G., and Khaleghi, N. (2015). Biosynthesis of gold nanoparticles using *Streptomyces fulvissimus* isolate. *Nanomedicine*, 2, 153-159.
- Song, J., Lee, S. C., Kang, J. W., Baek, H. J., and Suh, J. W. (2004). Phylogenetic analysis of *Streptomyces* spp. isolated from potato scab lesions in Korea on the basis of 16S rRNA gene and 16S-23S rDNA internally transcribed spacer sequences. *Int J Syst Evol Microbiol*, 54(Pt 1), 203-209.
- Sperling, R. A., Gil, P. R., Zhang, F., Zanella, M., and Parak, W. J. (2008). Biological applications of gold nanoparticles. *Chemical Society Reviews*, 37(9), 1896-1908.
- Srinath, B., and Rai, R. V. (2015). Biosynthesis of gold nanoparticles using extracellular molecules produced by *Enterobacter aerogenes* and their catalytic study. *Journal of Cluster Science*, 26(5), 1483-1494.
- Strasser, P., Koh, S., Anniyev, T., Greeley, J., More, K., Yu, C., . . . Ogasawara, H. (2010). Lattice-strain control of the activity in dealloyed core-shell fuel cell catalysts. *Nature chemistry*, 2(6), 454-460.
- Sun, L., Liu, D., and Wang, Z. (2008). Functional gold nanoparticle-peptide complexes as cell-targeting agents. *Langmuir*, 24(18), 10293-10297.

- Sun, S., Mendes, P., Critchley, K., Diegoli, S., Hanwell, M., Evans, S. D., . . . Richardson, T. H. (2006). Fabrication of gold micro-and nanostructures by photolithographic exposure of thiol-stabilized gold nanoparticles. *Nano letters*, 6(3), 345-350.
- Sun, X., Zhang, G., Keynton, R. S., O'Toole, M. G., Patel, D., and Gobin, A. M. (2013). Enhanced drug delivery via hyperthermal membrane disruption using targeted gold nanoparticles with PEGylated Protein-G as a cofactor. *Nanomedicine: Nanotechnology, Biology and Medicine*, 9(8), 1214-1222.
- Svedberg, T., and Pedersen, K. O. (1940). The ultracentrifuge. *The Ultracentrifuge*.
- Tahir, K., Nazir, S., Li, B., Khan, A. U., Khan, Z. U. H., Gong, P. Y., . . . Ahmad, A. (2015). Nerium oleander leaves extract mediated synthesis of gold nanoparticles and its antioxidant activity. *Materials Letters*, 156, 198-201.
- Takeuchi, T., Sawada, H., Tanaka, F., and Matsuda, I. (1996). Phylogenetic Analysis of Streptomyces spp. Causing Potato Scab Based on 16S rRNA Sequences. *International Journal of Systematic and Evolutionary Microbiology*, 46(2), 476-479.
- Tang, Z., Kotov, N. A., and Giersig, M. (2002). Spontaneous organization of single CdTe nanoparticles into luminescent nanowires. *Science*, 297(5579), 237-240.
- Taylor, M. W., Radax, R., Steger, D., and Wagner, M. (2007). Sponge-associated microorganisms: evolution, ecology, and biotechnological potential. *Microbiology and molecular biology reviews*, 71(2), 295-347.
- Tedesco, S., Doyle, H., Blasco, J., Redmond, G., and Sheehan, D. (2010). Oxidative stress and toxicity of gold nanoparticles in *Mytilus edulis*. *Aquatic toxicology*, 100(2), 178-186.
- Wan Mat Khalir, W. K. A., Shamel, K., Jazayeri, S. D., Othman, N. A., Che Jusoh, N. W., and Hassan, N. M. (2020). Biosynthesized Silver Nanoparticles by Aqueous Stem Extract of *Entada spiralis* and Screening of Their Biomedical Activity. *Frontiers in Chemistry*, 8. doi:10.3389/fchem.2020.00620
- Wang, L., Hu, C., and Shao, L. (2017). The antimicrobial activity of nanoparticles: present situation and prospects for the future. *International journal of nanomedicine*, 12, 1227.

- Wangoo, N., Bhasin, K., Mehta, S., and Suri, C. R. (2008). Synthesis and capping of water-dispersed gold nanoparticles by an amino acid: bioconjugation and binding studies. *Journal of colloid and interface science*, 323(2), 247-254.
- Weir, E., Lawlor, A., Whelan, A., and Regan, F. (2008). The use of nanoparticles in antimicrobial materials and their characterization. *Analyst*, 133(7), 835-845.
- Weisburg, W. G., Barns, S. M., Pelletier, D. A., and Lane, D. J. (1991). 16S ribosomal DNA amplification for phylogenetic study. *Journal of bacteriology*, 173(2), 697-703.
- Wong, S. S., Joselevich, E., Woolley, A. T., Cheung, C. L., and Lieber, C. M. (1998). Covalently functionalized nanotubes as nanometre-sized probes in chemistry and biology. *Nature*, 394(6688), 52-55.
- Wu, Y., Wang, H., Gao, F., Xu, Z., Dai, F., and Liu, W. (2018). An injectable supramolecular polymer nanocomposite hydrogel for prevention of breast cancer recurrence with theranostic and mammoplastics functions. *Advanced Functional Materials*, 28(21), 1801000.
- Yang, B., Wang, Y., and Qian, P.-Y. (2016). Sensitivity and correlation of hypervariable regions in 16S rRNA genes in phylogenetic analysis. *BMC bioinformatics*, 17(1), 1-8.
- Yang, J., Deng, S., Lei, J., Ju, H., and Gunasekaran, S. (2011). Electrochemical synthesis of reduced graphene sheet–AuPd alloy nanoparticle composites for enzymatic biosensing. *Biosensors and Bioelectronics*, 29(1), 159-166.
- Ye, H., Shen, Z., Yu, L., Wei, M., and Li, Y. (2018). Manipulating nanoparticle transport within blood flow through external forces: an exemplar of mechanics in nanomedicine. *Proceedings. Mathematical, physical, and engineering sciences*, 474(2211), 20170845-20170845.
- Yee, F. Y., Periasamy, V., and Malek, S. N. A. (2015). *Green synthesis of gold nanoparticles using aqueous ethanol extract of Curcuma mangga rhizomes as reducing agent*. Paper presented at the AIP conference proceedings.
- Yeh, Y. C., Creran, B., and Rotello, V. M. (2012). Gold nanoparticles: preparation, properties, and applications in bionanotechnology. *Nanoscale*, 4(6), 1871-1880.

- Yiing Yee, F., Periasamy, V., and Abd Malek, S. N. (2014). Green synthesis of gold nanoparticles using aqueous ethanol extract of Curcuma mangga rhizomes as reducing agent. *1657*.
- Yuan, H., Khouri, C. G., Hwang, H., Wilson, C. M., Grant, G. A., and Vo-Dinh, T. (2012). Gold nanostars: surfactant-free synthesis, 3D modelling, and two-photon photoluminescence imaging. *Nanotechnology*, *23*(7), 075102.
- Zainab Mazhari, B. B. (2022). Antiviral Properties of Streptomyces tuirus DBZ39 Mediated Gold Nanoparticles Against Bluetongue virus. *Pak J Biol Sci*, *25*(1), 90-99.
- Zeng, S., Yu, X., Law, W.-C., Zhang, Y., Hu, R., Dinh, X.-Q., . . . Yong, K.-T. (2013). Size dependence of Au NP-enhanced surface plasmon resonance based on differential phase measurement. *Sensors and Actuators B: Chemical*, *176*, 1128-1133.
- Zhang, X., Sun, B., Tang, Q., Chen, R., and Han, S. (2019). Molecular Identification and Phylogenetic Analysis of Nuclear rDNA Sequences of Clonorchis sinensis Isolates From Human Fecal Samples in Heilongjiang Province, China. *Frontiers in Microbiology*, *10*.
- Zhang, Y., Shareena Dasari, T. P., Deng, H., and Yu, H. (2015). Antimicrobial activity of gold nanoparticles and ionic gold. *Journal of Environmental Science and Health, Part C*, *33*(3), 286-327.
- Zhao, N., Wei, Y., Sun, N., Chen, Q., Bai, J., Zhou, L., . . . Qi, L. (2008). Controlled synthesis of gold nanobelts and nanocombs in aqueous mixed surfactant solutions. *Langmuir*, *24*(3), 991-998.
- Zhou, Y., Kong, Y., Kundu, S., Cirillo, J. D., and Liang, H. (2012). Antibacterial activities of gold and silver nanoparticles against Escherichia coli and bacillus Calmette-Guérin. *Journal of nanobiotechnology*, *10*(1), 1-9.
- Zonooz, N. F., Salouti, M., Shapouri, R., and Nasseryan, J. (2012). Biosynthesis of gold nanoparticles by Streptomyces sp. ERI-3 supernatant and process optimization for enhanced production. *Journal of Cluster Science*, *23*(2), 375-382.

Zotchev, S. B. (2012). Marine actinomycetes as an emerging resource for the drug development pipelines. *Journal of biotechnology*, 158(4), 168-175.