

REFERENCES

- Abou El-Nour, K. M., Eftaiha, A. A., Al-Warthan, A., & Ammar, R. A. (2010). Synthesis and applications of silver nanoparticles. *Arabian journal of chemistry*, **3**(3), 135-140.
- Aggarwal, R., Saini, D., Singh, B., Kaushik, J., Garg, A. K., & Sonkar, S. K. (2020). Bitter apple peel derived photoactive carbon dots for the sunlight induced photocatalytic degradation of crystal violet dye. *Solar Energy*, **197**, 326-331.
- Alamu, E. O., Maziya-Dixon, B., Menkir, A., Irondi, E. A., & Olaofe, O. (2021). Bioactive Composition and Free Radical Scavenging Activity of Fresh Orange Maize Hybrids: Impacts of Genotype, Maturity Stages, and Processing Methods. *Frontiers in Nutrition*, **8**, 640563.
- Arkan, E., Barati, A., Rahmanpanah, M., Hosseinzadeh, L., Moradi, S., & Hajjalyani, M. (2018). Green synthesis of carbon dots derived from walnut oil and an investigation of their cytotoxic and apoptogenic activities toward cancer cells. *Advanced pharmaceutical bulletin*, **8**(1), 149.
- Arumugham, T., Alagumuthu, M., Amimodu, R. G., Munusamy, S., & Iyer, S. K. (2020). A sustainable synthesis of green carbon quantum dot (CQD) from *Catharanthus roseus* (white flowering plant) leaves and investigation of its dual fluorescence responsive behavior in multi-ion detection and biological applications. *Sustainable Materials and Technologies*, **23**, e00138.
- Asharani, P. V., Sethu, S., Vadukumpully, S., Zhong, S., Lim, C. T., Hande, M. P., & Valiyaveetil, S. (2010). Investigations on the structural damage in human erythrocytes exposed to silver, gold, and platinum nanoparticles. *Advanced Functional Materials*, **20**(8), 1233-1242.
- Atchudan, R., Edison, T. N. J. I., Chakradhar, D., Perumal, S., Shim, J. J., & Lee, Y. R. (2017). Facile green synthesis of nitrogen-doped carbon dots using *Chionanthus*

- retusus fruit extract and investigation of their suitability for metal ion sensing and biological applications. *Sensors and Actuators B: Chemical*, 246, 497-509.
- Atchudan, R., Edison, T. N. J. I., Perumal, S., Vinodh, R., & Lee, Y. R. (2019). Betel-derived nitrogen-doped multicolor carbon dots for environmental and biological applications. *Journal of Molecular Liquids*, 296, 111817.
- Atchudan, R., Edison, T. N. J. I., Sethuraman, M. G., & Lee, Y. R. (2016). Efficient synthesis of highly fluorescent nitrogen-doped carbon dots for cell imaging using unripe fruit extract of *Prunus mume*. *Applied Surface Science*, 384, 432-441.
- Atchudan, R., Jebakumar Immanuel Edison, T.N., Perumal, S. and Lee, Y.R., 2018. Indian gooseberry-derived tunable fluorescent carbon dots as a promise for in vitro/in vivo multicolor bioimaging and fluorescent ink. *Acs Omega*, 3(12), pp.17590-17601.
- Bajpai, S. K., D'Souza, A., & Suhail, B. (2019). Blue light-emitting carbon dots (CDs) from a milk protein and their interaction with *Spinacia oleracea* leaf cells. *International Nano Letters*, 9(3), 203-212.
- Bandi, R., Gangapuram, B. R., Dadigala, R., Eslavath, R., Singh, S. S., & Guttena, V. (2016). Facile and green synthesis of fluorescent carbon dots from onion waste and their potential applications as sensor and multicolour imaging agents. *RSC advances*, 6(34), 28633-28639.
- Bankoti, K., Rameshbabu, A. P., Datta, S., Das, B., Mitra, A., & Dhara, S. (2017). Onion derived carbon nanodots for live cell imaging and accelerated skin wound healing. *Journal of Materials Chemistry B*, 5(32), 6579-6592.
- Bhattacharjee S (2016) DLS and zeta potential—what they are and what they are not? *J Control Release* 235:337–351

- Bhutani, K. K., Paul, A. T., Fayad, W., & Linder, S. (2010). Apoptosis inducing activity of steroidal constituents from *Solanum xanthocarpum* and *Asparagus racemosus*. *Phytomedicine*, 17(10), 789-793.
- Bonam, S.R., Wu, Y.S., Tunki, L., Chellian, R., Halmuthur, M.S.K., Muller, S. and Pandey, V., 2018. What has come out from phytomedicines and herbal edibles for the treatment of cancer?. *ChemMedChem*, 13(18), pp.1854-1872.
- Bopana, N., & Saxena, S. (2007). *Asparagus racemosus*—Ethnopharmacological evaluation and conservation needs. *Journal of ethnopharmacology*, 110(1), 1-15.
- Bourlinos, A. B., Stassinopoulos, A., Anglos, D., Zboril, R., Karakassides, M., & Giannelis, E. P. (2008). Surface functionalized carbogenic quantum dots. *small*, 4(4), 455-458.
- Cao, L., Wang, X., Mezziani, M. J., Lu, F., Wang, H., Luo, P. G., ... & Sun, Y. P. (2007). Carbon dots for multiphoton bioimaging. *Journal of the American Chemical Society*, 129(37), 11318-11319.
- Chen J, Law CC, Lam JW, Dong Y, Lo SM, Williams ID, Zhu D, Tang BZ. Synthesis, light emission, nanoaggregation, and restricted intramolecular rotation of 1, 1-substituted 2, 3, 4, 5-tetraphenylsiloles. *Chemistry of materials*. 2003 Apr 8;15(7):1535-46.
- Chen, M., Zhou, S., Zhu, Y., Sun, Y., Zeng, G., Yang, C., ... & Zhang, W. (2018). Toxicity of carbon nanomaterials to plants, animals and microbes: Recent progress from 2015-present. *Chemosphere*, 206, 255-264.
- Chen, Y., Lin, J., Zhang, R., He, S., Ding, Z., & Ding, L. (2021). Electrochemiluminescence of water-dispersed nitrogen and sulfur doped carbon dots synthesized from amino acids. *Analyst*, 146(17), 5287-5293.
- Chi, X., Huang, D., Zhao, Z., Zhou, Z., Yin, Z., & Gao, J. (2012). Nanoprobes for in vitro diagnostics of cancer and infectious diseases. *Biomaterials*, 33(1), 189-206.

- Chunduri, L.A., Kurdekar, A., Patnaik, S., Dev, B.V., Rattan, T.M. and Kamiseti, V., 2016. Carbon quantum dots from coconut husk: evaluation for antioxidant and cytotoxic activity. *Materials Focus*, 5(1), pp.55-61.
- Cox, T. R. (2021). The matrix in cancer. *Nature Reviews Cancer*, 21(4), 217-238.
- Dadsena S, King LE, García-Sáez AJ. Apoptosis regulation at the mitochondria membrane level. *Biochimica et Biophysica Acta (BBA)-Biomembranes*. 2021 Dec 1;1863(12):183716.
- Dai, Y., Chen, S.R., Chai, L., Zhao, J., Wang, Y. and Wang, Y., 2019. Overview of pharmacological activities of *Andrographis paniculata* and its major compound andrographolide. *Critical reviews in food science and nutrition*, 59(sup1), pp.S17-S29.
- Datta, K. K. R., Kozak, O., Ranc, V., Havrdova, M., Bourlinos, A. B., Šafářová, K., ... & Zbořil, R. (2014). Quaternized carbon dot-modified graphene oxide for selective cell labelling—controlled nucleus and cytoplasm imaging. *Chemical Communications*, 50(74), 10782-10785.
- De, B., Voit, B. and Karak, N., 2014. Carbon dot reduced Cu₂O nanohybrid/hyperbranched epoxy nanocomposite: mechanical, thermal and photocatalytic activity. *RSC advances*, 4(102), pp.58453-58459.
- Dimos, K., 2016. Carbon quantum dots: surface passivation and functionalization. *Current Organic Chemistry*, 20(6), pp.682-695.
- Ding, H., Ji, Y., Wei, J. S., Gao, Q. Y., Zhou, Z. Y., & Xiong, H. M. (2017). Facile synthesis of red-emitting carbon dots from pulp-free lemon juice for bioimaging. *Journal of Materials Chemistry B*, 5(26), 5272-5277.
- Doherty, G. J., & McMahon, H. T. (2009). Mechanisms of endocytosis. *Annual review of biochemistry*, 78(1), 857-902.

- Đorđević, L., Arcudi, F., Cacioppo, M. and Prato, M., 2022. A multifunctional chemical toolbox to engineer carbon dots for biomedical and energy applications. *Nature Nanotechnology*, 17(2), pp.112-130.
- Döring, A., Ushakova, E., & Rogach, A. L. (2022). Chiral carbon dots: synthesis, optical properties, and emerging applications. *Light: Science & Applications*, 11(1), 1-23.
- Drake, P. L., & Hazelwood, K. J. (2005). Exposure-related health effects of silver and silver compounds: a review. *The Annals of occupational hygiene*, 49(7), 575-585.
- Du, J., Wang, H., Wang, L., Zhu, S., Song, Y., Yang, B., & Sun, H. (2016). Insight into the effect of functional groups on visible-fluorescence emissions of graphene quantum dots. *Journal of Materials Chemistry C*, 4(11), 2235-2242.
- Du, Y., & Guo, S. (2016). Chemically doped fluorescent carbon and graphene quantum dots for bioimaging, sensor, catalytic and photoelectronic applications. *Nanoscale*, 8(5), 2532-2543.
- Dudley, A. C. (2012). Tumor endothelial cells. *Cold Spring Harbor perspectives in medicine*, 2(3), a006536.
- Edison, T.N.J.I., Atchudan, R., Shim, J.J., Kalimuthu, S., Ahn, B.C. and Lee, Y.R., 2016. Turn-off fluorescence sensor for the detection of ferric ion in water using green synthesized N-doped carbon dots and its bio-imaging. *Journal of Photochemistry and Photobiology B: Biology*, 158, pp.235-242.
- Emam, H. E., & Ahmed, H. B. (2021). Antitumor/antiviral carbon quantum dots based on carrageenan and pullulan. *International Journal of Biological Macromolecules*, 170, 688-700.
- Essner, J. B., Kist, J. A., Polo-Parada, L., & Baker, G. A. (2018). Artifacts and errors associated with the ubiquitous presence of fluorescent impurities in carbon nanodots. *Chemistry of Materials*, 30(6), 1878-1887.

- Ezeh, V. C., & Harrop, T. C. (2012). A sensitive and selective fluorescence sensor for the detection of arsenic (III) in organic media. *Inorganic chemistry*, 51(3), 1213-1215.
- Fahmi, M. Z., Haris, A., Permana, A. J., Wibowo, D. L. N., Purwanto, B., Nikmah, Y. L., & Idris, A. (2018). Bamboo leaf-based carbon dots for efficient tumor imaging and therapy. *RSC advances*, 8(67), 38376-38383.
- Fu, B., Liu, Q., Liu, M., Chen, X., Lin, H., Zheng, Z., ... & Yang, D. P. (2022). Carbon dots enhanced gelatin/chitosan bio-nanocomposite packaging film for perishable foods. *Chinese Chemical Letters*.
- Fu, P. P., Xia, Q., Hwang, H. M., Ray, P. C., & Yu, H. (2014). Mechanisms of nanotoxicity: generation of reactive oxygen species. *Journal of food and drug analysis*, 22(1), 64-75.
- Fu, Z., Yao, M., Niu, X., & Cui, F. (2016). Facile synthesis of highly luminescent co-doped carbon nanodots for rapid, sensitive, and label-free detection of Hg²⁺. *Sensors and Actuators B: Chemical*, 226, 486-494.
- Fujita T, Fujitani R, TAKEDA Y, TAKAISHI Y, YAMADA T, KIDO M, Miura I. On the diterpenoids of *Andrographis paniculata*: X-ray crystallographic analysis of andrographolide and structure determination of new minor diterpenoids. *Chemical and Pharmaceutical Bulletin*. 1984 Jun 25;32(6):2117-25.
- Geng, B., Yang, D., Pan, D., Wang, L., Zheng, F., Shen, W., ... & Li, X. (2018). NIR-responsive carbon dots for efficient photothermal cancer therapy at low power densities. *Carbon*, 134, 153-162.
- Gong, X., Lu, W., Liu, Y., Li, Z., Shuang, S., Dong, C. and Choi, M.M., 2015. Low temperature synthesis of phosphorous and nitrogen co-doped yellow fluorescent carbon dots for sensing and bioimaging. *Journal of Materials Chemistry B*, 3(33), pp.6813-6819.

- Gong, X., Lu, W., Paau, M. C., Hu, Q., Wu, X., Shuang, S., ... & Choi, M. M. (2015). Facile synthesis of nitrogen-doped carbon dots for Fe³⁺ sensing and cellular imaging. *Analytica chimica acta*, 861, 74-84.
- Gul, A. R., Le, T. N., Kim, M. W., Kailasa, S. K., Oh, K. T., & Park, T. J. (2019). One-pot synthesis of carbon dots with intrinsic folic acid for synergistic imaging-guided photothermal therapy of prostate cancer cells. *Biomaterials science*, 7(12), 5187-5196.
- Guo, D., Wei, H. F., Song, R. B., Fu, J., Lu, X., Jelinek, R., ... & Zhu, J. J. (2019). N, S-doped carbon dots as dual-functional modifiers to boost bio-electricity generation of individually-modified bacterial cells. *Nano Energy*, 63, 103875.
- Guo, X., Zhu, Y., Zhou, L., Zhang, L., You, Y., Zhang, H., & Hao, J. (2018). A facile and green approach to prepare carbon dots with pH-dependent fluorescence for patterning and bioimaging. *RSC advances*, 8(66), 38091-38099.
- Hailing Y, Xiufang L, Lili W, Baoqiang L, Kaichen H, Yongquan H, Qianqian Z, Chaoming M, Xiaoshuai R, Rui Z, Hui L. Doxorubicin-loaded fluorescent carbon dots with PEI passivation as a drug delivery system for cancer therapy. *Nanoscale*. 2020;12(33):17222-37.
- Hajipour, M. J., Fromm, K. M., Ashkarran, A. A., de Aberasturi, D. J., de Larramendi, I. R., Rojo, T., ... & Mahmoudi, M. (2012). Antibacterial properties of nanoparticles. *Trends in biotechnology*, 30(10), 499-511.
- Hamblin, M.R. and Avci, P. eds., 2015. *Applications of Nanoscience in Photomedicine*. Elsevier.
- Hamblin, M.R. and Huang, Y. eds., 2013. *Handbook of photomedicine*. Taylor & Francis.

- Harbeck, N., Penault-Llorca, F., Cortes, J., Gnant, M., Houssami, N., Poortmans, P., Ruddy, K., Tsang, J. and Cardoso, F., 2019. Breast cancer. *Nature reviews Disease primers*, 5(1), pp.1-31.
- Havrdova, M., Hola, K., Skopalik, J., Tomankova, K., Petr, M., Cepe, K., ... & Zboril, R. (2016). Toxicity of carbon dots—Effect of surface functionalization on the cell viability, reactive oxygen species generation and cell cycle. *Carbon*, 99, 238-248.
- He, J., He, Y., Chen, Y., Lei, B., Zhuang, J., Xiao, Y., ... & Liu, Y. (2017). Solid-state carbon dots with red fluorescence and efficient construction of dual-fluorescence morphologies. *Small*, 13(26), 1700075.
- Hettiarachchi, S. D., Graham, R. M., Mintz, K. J., Zhou, Y., Vanni, S., Peng, Z., & Leblanc, R. M. (2019). Triple conjugated carbon dots as a nano-drug delivery model for glioblastoma brain tumors. *Nanoscale*, 11(13), 6192-6205.
- Hoffmann, M. M. (2022). Polyethylene glycol as a green chemical solvent. *Current Opinion in Colloid & Interface Science*, 57, 101537.
- Hola, K., Sudolska, M., Kalytchuk, S., Nachtigallova, D., Rogach, A. L., Otyepka, M., & Zboril, R. (2017). Graphitic nitrogen triggers red fluorescence in carbon dots. *ACS nano*, 11(12), 12402-12410.
- Hola, K., Sudolska, M., Kalytchuk, S., Nachtigallova, D., Rogach, A.L., Otyepka, M. and Zboril, R., 2017. Graphitic nitrogen triggers red fluorescence in carbon dots. *ACS nano*, 11(12), pp.12402-12410.
- Hu S, Yang W, Li N, Wang H, Yang J, Chang Q. Carbon-dot-based heterojunction for engineering band-edge position and photocatalytic performance. *Small*. 2018 Nov;14(44):1803447.
- Hu, C., Lin, T. J., Huang, Y. C., Chen, Y. Y., Wang, K. H., & Lin, K. Y. A. (2021). Photoluminescence quenching of thermally treated waste-derived carbon dots for selective metal ion sensing. *Environmental Research*, 197, 111008.

- Huang, H., Xu, Y., Tang, C. J., Chen, J. R., Wang, A. J., & Feng, J. J. (2014). Facile and green synthesis of photoluminescent carbon nanoparticles for cellular imaging. *New Journal of Chemistry*, 38(2), 784-789.
- Huang, J., He, Y., Zhang, Z., Lei, B. and Wu, W., 2019. Synthesis of high-efficient red carbon dots for pH detection. *Journal of Luminescence*, 215, p.116640.
- Huang, X., Song, J., Yung, B. C., Huang, X., Xiong, Y., & Chen, X. (2018). Ratiometric optical nanoprobe enable accurate molecular detection and imaging. *Chemical Society Reviews*, 47(8), 2873-2920.
- Jafari, S., Soleimani, M., & Salehi, R. (2019). Nanotechnology-based combinational drug delivery systems for breast cancer treatment. *International Journal of Polymeric Materials and Polymeric Biomaterials*, 68(14), 859-869.
- Jeong, C. J., Roy, A. K., Kim, S. H., Lee, J. E., Jeong, J. H., In, I., & Park, S. Y. (2014). Fluorescent carbon nanoparticles derived from natural materials of mango fruit for bio-imaging probes. *Nanoscale*, 6(24), 15196-15202.
- Jiang, K., Zhang, L., Lu, J., Xu, C., Cai, C., & Lin, H. (2016). Triple-mode emission of carbon dots: applications for advanced anti-counterfeiting. *Angewandte Chemie*, 128(25), 7347-7351.
- Kalytchuk, S., Poláková, K., Wang, Y., Froning, J. P., Cepe, K., Rogach, A. L., & Zbořil, R. (2017). Carbon dot nanothermometry: intracellular photoluminescence lifetime thermal sensing. *ACS nano*, 11(2), 1432-1442.
- Kang, C., Huang, Y., Yang, H., Yan, X. F., & Chen, Z. P. (2020). A review of carbon dots produced from biomass wastes. *Nanomaterials*, 10(11), 2316.
- Keat, C. L., Aziz, A., Eid, A. M., & Elmarzugi, N. A. (2015). Biosynthesis of nanoparticles and silver nanoparticles. *Bioresources and Bioprocessing*, 2(1), 1-11.

- Khan S, Dunphy A, Anike MS, Belperain S, Patel K, Chiu NH, Jia Z. Recent advances in carbon nanodots: a promising nanomaterial for biomedical applications. *International Journal of Molecular Sciences*. 2021 Jun 24;22(13):6786.
- Khan, M. S. A., & Ahmad, I. (2019). Herbal medicine: current trends and future prospects. In *New look to phytomedicine* (pp. 3-13). Academic Press.
- Khan, Z. M., Rahman, R. S., Islam, S., & Zulfequar, M. (2019). Hydrothermal treatment of red lentils for the synthesis of fluorescent carbon quantum dots and its application for sensing Fe³⁺. *Optical Materials*, 91, 386-395.
- Khandelwal G, Minocha T, Yadav SK, Chandrasekhar A, Raj NP, Gupta SC, Kim SJ. All edible materials derived biocompatible and biodegradable triboelectric nanogenerator. *Nano Energy*. 2019;65:104016
- Kholiya F, Chatterjee S, Bhojani G, Sen S, Barkume M, Kasinathan NK, Kode J, Meena R. Seaweed polysaccharide derived bioaldehyde nanocomposite: Potential application in anticancer therapeutics. *Carbohydrate polymers*. 2020 Jul 15;240:116282.
- Kong T, Hao L, Wei Y, Cai X, Zhu B. Doxorubicin conjugated carbon dots as a drug delivery system for human breast cancer therapy. *Cell proliferation*. 2018 Oct;51(5):e12488.
- Koo, H., Huh, M. S., Ryu, J. H., Lee, D. E., Sun, I. C., Choi, K., ... & Kwon, I. C. (2011). Nanoprobes for biomedical imaging in living systems. *Nano Today*, 6(2), 204-220.
- Krysmann, M. J., Kelarakis, A., Dallas, P., & Giannelis, E. P. (2012). Formation mechanism of carbogenic nanoparticles with dual photoluminescence emission. *Journal of the American Chemical Society*, 134(2), 747-750.
- Kumar AS, Jiang SJ. Synthesis of magnetically separable and recyclable magnetic nanoparticles decorated with β -cyclodextrin functionalized graphene oxide an

- excellent adsorption of As (V)/(III). *Journal of Molecular Liquids*. 2017 Jul 1;237:387-401.
- Kumar, A. Santhana Krishna, and Shih-Jen Jiang. "Synthesis of magnetically separable and recyclable magnetic nanoparticles decorated with β -cyclodextrin functionalized graphene oxide an excellent adsorption of As (V)/(III)." *Journal of Molecular Liquids* 237 (2017): 387-401.
- Kumar, A., Chowdhuri, A. R., Laha, D., Mahto, T. K., Karmakar, P., & Sahu, S. K. (2017). Green synthesis of carbon dots from *Ocimum sanctum* for effective fluorescent sensing of Pb^{2+} ions and live cell imaging. *Sensors and Actuators B: Chemical*, 242, 679-686.
- Lee YC, Zocharski PD, Samas B (2003) An intravenous formulation decision tree for discovery compound formulation development. *Int J Pharm* 253(1–2):111–119
- Li, F., Li, T., Sun, C., Xia, J., Jiao, Y., & Xu, H. (2017). Selenium-doped carbon quantum dots for free-radical scavenging. *Angewandte Chemie International Edition*, 56(33), 9910-9914.
- Li, F., Li, Y., Yang, X., Han, X., Jiao, Y., Wei, T., ... & Nie, G. (2018). Highly fluorescent chiral N-S-doped carbon dots from cysteine: affecting cellular energy metabolism. *Angewandte Chemie*, 130(9), 2401-2406.
- Li, H., Kang, Z., Liu, Y., & Lee, S. T. (2012). Carbon nanodots: synthesis, properties and applications. *Journal of materials chemistry*, 22(46), 24230-24253.
- Li, W., Yue, Z., Wang, C., Zhang, W., & Liu, G. (2013). An absolutely green approach to fabricate carbon nanodots from soya bean grounds. *RSC advances*, 3(43), 20662-20665.
- Lim, S. Y., Shen, W., & Gao, Z. (2015). Carbon quantum dots and their applications. *Chemical Society Reviews*, 44(1), 362-381.

- Lin, F., Pei, D., He, W., Huang, Z., Huang, Y., & Guo, X. (2012). Electron transfer quenching by nitroxide radicals of the fluorescence of carbon dots. *Journal of Materials Chemistry*, 22(23), 11801-11807.
- Liu J, Kong T, Xiong HM. Mulberry-Leaves-Derived Red-Emissive Carbon Dots for Feeding Silkworms to Produce Brightly Fluorescent Silk. *Advanced Materials*. 2022 Apr;34(16):2200152.
- Liu, M. L., Chen, B. B., Li, C. M., & Huang, C. Z. (2019). Carbon dots: synthesis, formation mechanism, fluorescence origin and sensing applications. *Green chemistry*, 21(3), 449-471.
- Lopez-Cantu, D. O., González-González, R. B., Melchor-Martínez, E. M., Martínez, S. A. H., Araújo, R. G., Parra-Arroyo, L., ... & Iqbal, H. M. (2022). Enzyme-mimicking capacities of carbon-dots nanozymes: Properties, catalytic mechanism, and applications—A review. *International Journal of Biological Macromolecules*, 194, 676-687.
- Lu, W., Gong, X., Nan, M., Liu, Y., Shuang, S., & Dong, C. (2015). Comparative study for N and S doped carbon dots: synthesis, characterization and applications for Fe³⁺ probe and cellular imaging. *Analytica chimica acta*, 898, 116-127.
- Lunardi, C. N., Gomes, A. J., Rocha, F. S., De Tommaso, J., & Patience, G. S. (2021). Experimental methods in chemical engineering: Zeta potential. *The Canadian Journal of Chemical Engineering*, 99(3), 627-639.
- Ma, Z., Ming, H., Huang, H., Liu, Y., & Kang, Z. (2012). One-step ultrasonic synthesis of fluorescent N-doped carbon dots from glucose and their visible-light sensitive photocatalytic ability. *New Journal of Chemistry*, 36(4), 861-864.
- Macara, I. G. (2001). Transport into and out of the nucleus. *Microbiology and molecular biology reviews*, 65(4), 570-594.

- Majidzadeh, H., Araj-Khodaei, M., Ghaffari, M., Torbati, M., Dolatabadi, J. E. N., & Hamblin, M. R. (2020). Nano-based delivery systems for berberine: A modern anti-cancer herbal medicine. *Colloids and Surfaces B: Biointerfaces*, 194, 111188.
- Majumdar S, Gupta S, Prajapati SK, Krishnamurthy S. Neuro-nutraceutical potential of *Asparagus racemosus*: A review. *Neurochemistry International*. 2021 May 1;145:105013.
- Malik, Z., Parveen, R., Parveen, B., Zahiruddin, S., Khan, M.A., Khan, A., Massey, S., Ahmad, S. and Husain, S.A., 2021. Anticancer potential of andrographolide from *Andrographis paniculata* (Burm. f.) Nees and its mechanisms of action. *Journal of Ethnopharmacology*, 272, p.113936.
- Marin, R., Benayas, A., García-Carillo, N., Lifante, J., Yao, J., Mendez-Gonzalez, D., ... & Jaque, D. (2022). Nanoprobes for Biomedical Imaging with Tunable Near-Infrared Optical Properties Obtained via Green Synthesis. *Advanced Photonics Research*, 3(1), 2100260.
- Mathew, S. A., Praveena, P., Dhanavel, S., Manikandan, R., Senthilkumar, S., & Stephen, A. (2020). Luminescent chitosan/carbon dots as an effective nano-drug carrier for neurodegenerative diseases. *RSC advances*, 10(41), 24386-24396.
- Mawia, A. M., Hui, S., Zhou, L., Li, H., Tabassum, J., Lai, C., ... & Hu, P. (2021). Inorganic arsenic toxicity and alleviation strategies in rice. *Journal of Hazardous Materials*, 408, 124751.
- McWilliams A. *Nanodevices and Nanomachines: the Global Market*, vol. 11 (2018).
- Meher RK, Pragyandipta P, Pedapati RK, Nagireddy PK, Kantevari S, Nayek AK, Naik PK. Rational design of novel N-alkyl amine analogues of noscapine, their chemical synthesis and cellular activity as potent anticancer agents. *Chemical Biology & Drug Design*. 2021 Sep;98(3):445-65.

- Mehta, V. N., Jha, S., & Kailasa, S. K. (2014). One-pot green synthesis of carbon dots by using *Saccharum officinarum* juice for fluorescent imaging of bacteria (*Escherichia coli*) and yeast (*Saccharomyces cerevisiae*) cells. *Materials Science and Engineering: C*, 38, 20-27.
- Mehta, V. N., Jha, S., Basu, H., Singhal, R. K., & Kailasa, S. K. (2015). One-step hydrothermal approach to fabricate carbon dots from apple juice for imaging of mycobacterium and fungal cells. *Sensors and Actuators B: Chemical*, 213, 434-443.
- Mehta, V. N., Jha, S., Singhal, R. K., & Kailasa, S. K. (2014). Preparation of multicolor emitting carbon dots for HeLa cell imaging. *New Journal of Chemistry*, 38(12), 6152-6160.
- Mehta, V. N., Jha, S., Singhal, R. K., & Kailasa, S. K. (2014). Preparation of multicolor emitting carbon dots for HeLa cell imaging. *New Journal of Chemistry*, 38(12), 6152-6160.
- Mewada, A., Pandey, S., Shinde, S., Mishra, N., Oza, G., Thakur, M., ... & Sharon, M. (2013). Green synthesis of biocompatible carbon dots using aqueous extract of *Trapa bispinosa* peel. *Materials Science and Engineering: C*, 33(5), 2914-2917.
- Milner AE, Palmer DH, Hodgkin EA, Eliopoulos AG, Knox PG, Poole CJ, Kerr DJ, Young LS. Induction of apoptosis by chemotherapeutic drugs: the role of FADD in activation of caspase-8 and synergy with death receptor ligands in ovarian carcinoma cells. *Cell Death & Differentiation*. 2002 Mar;9(3):287-300.
- Minocha, T., Das, M., Rai, V., Verma, S. S., Awasthee, N., Gupta, S. C., ... & Yadav, S. K. (2022). Melatonin induces apoptosis and cell cycle arrest in cervical cancer cells via inhibition of NF- κ B pathway. *Inflammopharmacology*, 1-19.
- Mishra K, Ojha H, Chaudhury NK. Estimation of antiradical properties of antioxidants using DPPH assay: A critical review and results. *Food chemistry*. 2012 Feb 15;130(4):1036-43.

- Mohapatra, D., Alam, M. B., Pandey, V., Pratap, R., Dubey, P. K., Parmar, A. S., & Sahu, A. N. (2021). Carbon dots from an immunomodulatory plant for cancer cell imaging, free radical scavenging and metal sensing applications. *Nanomedicine*, 16(23), 2039-2059.
- Mohapatra, D., Pratap, R., Pandey, V., Dubey, P. K., Agrawal, A. K., Parmar, A. S., & Sahu, A. N. (2022). Tinospora Cordifolia Leaves Derived Carbon Dots For Cancer Cell Bioimaging, Free Radical Scavenging, And Fe³⁺ Sensing Applications. *Journal of Fluorescence*, 32(1), 275-292.
- Mohapatra, D., Pratap, R., Pandey, V., Shreya, S., Senapati, P. C., Dubey, P. K., ... & Sahu, A. N. (2022). In Vitro Cancer Cell Imaging, Free Radical Scavenging, and Fe³⁺ Sensing Activity of Green Synthesized Carbon Dots from Leaves of Piper longum. *Journal of Cluster Science*, 1-22.
- Naik, G. G., Alam, M. B., Pandey, V., Dubey, P. K., Parmar, A. S., & Sahu, A. N. (2020). Pink fluorescent carbon dots derived from the phytomedicine for breast cancer cell imaging. *ChemistrySelect*, 5(23), 6954-6960.
- Naik, G. G., Alam, M., Pandey, V., Mohapatra, D., Dubey, P. K., Parmar, A. S., & Sahu, A. N. (2020). Multi-Functional carbon dots from an ayurvedic medicinal plant for cancer cell Bioimaging Applications. *Journal of Fluorescence*, 30(2), 407-418.
- Naik, G. G., Shah, J., Balasubramaniam, A. K., & Sahu, A. N. (2021). Applications of natural product-derived carbon dots in cancer biology. *Nanomedicine*, 16(7), 587-608.
- Nel AE, Mädler L, Velegol D, Xia T, Hoek E, Somasundaran P, Klaessig F, Castranova V, Thompson M. Understanding biophysicochemical interactions at the nano–bio interface. *Nature materials*. 2009 Jul;8(7):543-57.

- Newman, D. J., & Cragg, G. M. (2020). Natural products as sources of new drugs over the nearly four decades from 01/1981 to 09/2019. *Journal of natural products*, 83(3), 770-803.
- Nigam P, Waghmode S, Louis M, Wangnoo S, Chavan P, Sarkar D. Graphene quantum dots conjugated albumin nanoparticles for targeted drug delivery and imaging of pancreatic cancer. *Journal of Materials Chemistry B*. 2014;2(21):3190-5.
- Noguchi, Y., Saito, A., Miyagi, Y., Yamanaka, S., Marat, D., Doi, C., ... & Satoh, S. (2000). Suppression of facilitative glucose transporter 1 mRNA can suppress tumor growth. *Cancer letters*, 154(2), 175-182.
- Nugroho, D., Keawprom, C., Chanthai, S., Oh, W. C., & Benchawattananon, R. (2022). Highly Sensitive Fingerprint Detection under UV Light on Non-Porous Surface Using Starch-Powder Based Luminol-Doped Carbon Dots (N-CDs) from Tender Coconut Water as a Green Carbon Source. *Nanomaterials*, 12(3), 400.
- Nurunnabi, M., Khatun, Z., Huh, K. M., Park, S. Y., Lee, D. Y., Cho, K. J., & Lee, Y. K. (2013). In vivo biodistribution and toxicology of carboxylated graphene quantum dots. *ACS nano*, 7(8), 6858-6867.
- Pal, D., Sahu, C. K., & Haldar, A. (2014). Bhasma: the ancient Indian nanomedicine. *Journal of advanced pharmaceutical technology & research*, 5(1), 4.
- Pal, T., Mohiyuddin, S., & Packirisamy, G. (2018). Facile and green synthesis of multicolor fluorescence carbon dots from curcumin: in vitro and in vivo bioimaging and other applications. *ACS omega*, 3(1), 831-843.
- Pandey AR, Ahmad S, Singh SP, Mishra A, Bisen AC, Sharma G, Ahmad I, Shukla SK, Bhatta RS, Kanojiya S, Tamrakar AK. Furostanol saponins from *Asparagus racemosus* as potential hypoglycemic agents. *Phytochemistry*. 2022 Jun 23:113286.
- Pandey, V., Tripathi, G., Kumar, D., Kumar, A. and Dubey, P.K., 2020. Novel 3, 4-diarylpyrazole as prospective anti-cancerous agents. *Heliyon*, 6(7), p.e04397.

- Patra, A., Satpathy, S., Shenoy, A. K., Bush, J. A., Kazi, M., & Hussain, M. D. (2018). Formulation and evaluation of mixed polymeric micelles of quercetin for treatment of breast, ovarian, and multidrug resistant cancers. *International journal of nanomedicine*, 13, 2869.
- Qi H, Teng M, Liu M, Liu S, Li J, Yu H, Teng C, Huang Z, Liu H, Shao Q, Umar A. Biomass-derived nitrogen-doped carbon quantum dots: highly selective fluorescent probe for detecting Fe³⁺ ions and tetracyclines. *Journal of colloid and interface science*. 2019 Mar 15;539:332-41.
- Qian, K., Guo, H., Chen, G., Ma, C., & Xing, B. (2018). Distribution of different surface modified carbon dots in pumpkin seedlings. *Scientific reports*, 8(1), 1-9.
- Rahimi F, Anbia M, Farahi M. Aqueous synthesis of L-methionine capped PbS quantum dots for sensitive detection and quantification of arsenic (III). *Journal of Photochemistry and Photobiology A: Chemistry*. 2021 Aug 1;417:113361.
- Rajani M, Shrivastava N, Ravishankara MN. A rapid method for isolation of andrographolide from *Andrographis paniculata* Nees (Kalmegh). *Pharmaceutical Biology*. 2000 Jul 1;38(3):204-9.
- Rajendran, S., Ramanaiyah, D. V., Kundu, S., & Bhunia, S. K. (2021). Yellow fluorescent carbon dots for selective recognition of As³⁺ and Fe³⁺ ions. *ACS Applied Nano Materials*, 4(10), 10931-10942.
- Ramanan, V., Thiyagarajan, S. K., Raji, K., Suresh, R., Sekar, R., & Ramamurthy, P. (2016). Outright green synthesis of fluorescent carbon dots from eutrophic algal blooms for in vitro imaging. *ACS Sustainable Chemistry & Engineering*, 4(9), 4724-4731.
- Ramezani, Z., Qorbanpour, M., & Rahbar, N. (2018). Green synthesis of carbon quantum dots using quince fruit (*Cydonia oblonga*) powder as carbon precursor:

- application in cell imaging and As³⁺ determination. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 549, 58-66.
- Rao, Y. K., Vimalamma, G., Rao, C. V., & Tzeng, Y. M. (2004). Flavonoids and andrographolides from *Andrographis paniculata*. *Phytochemistry*, 65(16), 2317-2321.
- Raveendran, V., Babu, A. R. S., & Renuka, N. K. (2019). Mint leaf derived carbon dots for dual analyte detection of Fe (iii) and ascorbic acid. *RSC advances*, 9(21), 12070-12077.
- Ray, P., Moitra, P., & Pan, D. (2022). Emerging theranostic applications of carbon dots and its variants. *View*, 3(2), 20200089.
- Rdest, M., & Janas, D. (2020). Effective doping of single-walled carbon nanotubes with polyethyleneimine. *Materials*, 14(1), 65.
- Ren, X., Cao, L., Liang, W., Wang, P., Bunker, C. E., Yang, L., ... & Sun, Y. P. (2022). Photoexcited State Properties of Poly (9-vinylcarbazole)-Functionalized Carbon Dots in Solution versus in Nanocomposite Films: Implications for Solid-State Optoelectronic Devices. *ACS Applied Nano Materials*, 5(2), 2820-2827.
- Rimal, V., Shishodia, S., Srivastava, P. K., Gupta, S., & Mallick, A. I. (2021). Synthesis and characterization of Indian essential oil Carbon Dots for interdisciplinary applications. *Applied Nanoscience*, 11(4), 1225-1239.
- Sachdev, A., & Gopinath, P. (2015). Green synthesis of multifunctional carbon dots from coriander leaves and their potential application as antioxidants, sensors and bioimaging agents. *Analyst*, 140(12), 4260-4269.
- Sachdev, A., Matai, I., & Gopinath, P. (2014). Implications of surface passivation on physicochemical and bioimaging properties of carbon dots. *RSC advances*, 4(40), 20915-20921.

- Saneja A, Kumar R, Singh A, Dubey RD, Minto MJ, Singh G, Mondhe DM, Panda AK, Gupta PN. Development and evaluation of long-circulating nanoparticles loaded with betulinic acid for improved anti-tumor efficacy. *International journal of pharmaceutics*. 2017, 531(1):153-66.
- Saraswat V, Kumari R, Yadav M. Novel carbon dots as efficient green corrosion inhibitor for mild steel in HCl solution: Electrochemical, gravimetric and XPS studies. *Journal of Physics and Chemistry of Solids*. 2022 Jan 1;160:110341.
- Schneider, J., Reckmeier, C. J., Xiong, Y., von Seckendorff, M., Sussha, A. S., Kasák, P., & Rogach, A. L. (2017). Molecular fluorescence in citric acid-based carbon dots. *The Journal of Physical Chemistry C*, 121(3), 2014-2022.
- Shamsipour M, Mansouri AM, Moradipour P. Temozolomide conjugated carbon quantum dots embedded in core/shell nanofibers prepared by coaxial electrospinning as an implantable delivery system for cell imaging and sustained drug release. *AAPS PharmSciTech*. 2019, 20(7):1-4.
- Shen, J., Shang, S., Chen, X., Wang, D., & Cai, Y. (2017). Facile synthesis of fluorescence carbon dots from sweet potato for Fe³⁺ sensing and cell imaging. *Materials Science and Engineering: C*, 76, 856-864.
- Sheng, Y., Ma, Z., Wang, X. and Han, Y., 2022. Ethanol organosolv lignin from different agricultural residues: Toward basic structural units and antioxidant activity. *Food Chemistry*, 376, p.131895.
- Shi, N., Sun, K., Zhang, Z., Zhao, J., Geng, L., & Lei, Y. (2021). Amino-modified carbon dots as a functional platform for drug delivery: Load-release mechanism and cytotoxicity. *Journal of Industrial and Engineering Chemistry*, 101, 372-378.
- Shivaji, K., Mani, S., Ponmurugan, P., De Castro, C. S., Lloyd Davies, M., Balasubramanian, M. G., & Pitchaimuthu, S. (2018). Green-synthesis-derived CdS

- quantum dots using tea leaf extract: antimicrobial, bioimaging, and therapeutic applications in lung cancer cells. *ACS Applied Nano Materials*, 1(4), 1683-1693.
- Shukla, D., Pandey, F. P., Kumari, P., Basu, N., Tiwari, M. K., Lahiri, J., ... & Parmar, A. S. (2019). Label-Free Fluorometric Detection of Adulterant Malachite Green Using Carbon Dots Derived from the Medicinal Plant Source *Ocimum tenuiflorum*. *ChemistrySelect*, 4(17), 4839-4847.
- Shyamal M, Mazumdar P, Maity S, Samanta S, Sahoo GP, Misra A. Highly selective turn-on fluorogenic chemosensor for robust quantification of Zn (II) based on aggregation induced emission enhancement feature. *ACS Sensors*. 2016 Jun 24;1(6):739-47.
- Siewert, B. and Stuppner, H., 2019. The photoactivity of natural products—an overlooked potential of phytomedicines?. *Phytomedicine*, 60, p.152985.
- Singh A, Mohapatra PK, Kalyanasundaram D, Kumar S (2019) Self-functionalized ultrastable water suspension of luminescent carbon quantum dots. *Mater Chem Phys* 225:23–27.
- Song Y, Shi W, Chen W, Li X, Ma H. Fluorescent carbon nanodots conjugated with folic acid for distinguishing folate-receptor-positive cancer cells from normal cells. *Journal of Materials Chemistry*. 2012;22(25):12568-73.
- Song, Z., Quan, F., Xu, Y., Liu, M., Cui, L., & Liu, J. (2016). Multifunctional N, S co-doped carbon quantum dots with pH-and thermo-dependent switchable fluorescent properties and highly selective detection of glutathione. *Carbon*, 104, 169-178.
- Souri D, Salimi N, Ghabooli M. Hydrothermal fabrication of pure ZnSe nanocrystals at different microwave irradiation times and their disc-diffusion antibacterial potential against Gram negative bacteria: Bio-optical advantages. *Inorganic Chemistry Communications*. 2021 Jan 1;123:108345.

- Sreelakshmi, S., Vineeth, P. K., Mohanan, A., & Ramesh, N. V. (2021). Ayurvedic bhasma and synthesized nanoparticles: a comparative review. *Materials Today: Proceedings*, 46, 3079-3083.
- Su, L., Qin, S., Cai, Y., Wang, L., Dong, W., Mao, G., ... & Zhang, H. (2022). Co, N-doped carbon dot nanozymes with acid pH-independence and substrate selectivity for biosensing and bioimaging. *Sensors and Actuators B: Chemical*, 353, 131150.
- Sun, X., & Lei, Y. (2017). Fluorescent carbon dots and their sensing applications. *TrAC Trends in Analytical Chemistry*, 89, 163-180.
- Sun, Y. P., Zhou, B., Lin, Y., Wang, W., Fernando, K. S., Pathak, P., ... & Xie, S. Y. (2006). Quantum-sized carbon dots for bright and colorful photoluminescence. *Journal of the American Chemical Society*, 128(24), 7756-7757.
- Sun, Y., Shen, C., Wang, J. and Lu, Y., 2015. Correction: Facile synthesis of biocompatible N, S-doped carbon dots for cell imaging and ion detecting. *RSC Advances*, 5(27), pp.20691-20691.
- Sun, Z., Li, X., Wu, Y., Wei, C., & Zeng, H. (2018). Origin of green luminescence in carbon quantum dots: specific emission bands originate from oxidized carbon groups. *New Journal of Chemistry*, 42(6), 4603-4611.
- Suresh, S. (2013). Semiconductor nanomaterials, methods and applications: a review. *Nanosci. Nanotechnol*, 3(3), 62-74.
- Tadesse, A., Hagos, M., RamaDevi, D., Basavaiah, K., & Belachew, N. (2020). Fluorescent-nitrogen-doped carbon quantum dots derived from citrus lemon juice: green synthesis, mercury (II) ion sensing, and live cell imaging. *ACS omega*, 5(8), 3889-3898.
- Tepliakov, N. V., Kundelev, E. V., Khavlyuk, P. D., Xiong, Y., Leonov, M. Y., Zhu, W., ... & Rukhlenko, I. D. (2019). sp²-sp³-Hybridized atomic domains determine optical features of carbon dots. *ACS nano*, 13(9), 10737-10744.

- Thakur, M., Pandey, S., Mewada, A., Patil, V., Khade, M., Goshi, E., & Sharon, M. (2014). Antibiotic conjugated fluorescent carbon dots as a theranostic agent for controlled drug release, bioimaging, and enhanced antimicrobial activity. *Journal of drug delivery*, 2014.
- Tian X, Chen L, Li Y, Yang C, Nie Y, Zhou C, Wang Y. Design and synthesis of a molecule with aggregation-induced emission effects and its application in the detection of arsenite in groundwater. *Journal of Materials Chemistry C*. 2017 Apr 13;5(15):3669-72.
- Tian, J., Li, C., Meng, J., Wang, L., Tong, Y., Zhao, Y., ... & Liang, A. (2022). Pharmacological effects and safety of *Andrographis paniculata* (Burm. f.) Nees. *Journal of Food Science*, 87(3), 1319-1330.
- Torkian, N., Bahrami, A., Hosseini-Abari, A., Momeni, M.M., Abdolkarimi-Mahabadi, M., Bayat, A., Hajipour, P., Rourani, H.A., Abbasi, M.S., Torkian, S. and Wen, Y., 2022. Synthesis and characterization of Ag-ion-exchanged zeolite/TiO₂ nanocomposites for antibacterial applications and photocatalytic degradation of antibiotics. *Environmental Research*, 207, p.112157.
- Tu, Y., Wang, S., Yuan, X., Wei, Y., Qin, K., Zhang, Q., ... & Ji, X. (2020). A novel fluorescent nitrogen, phosphorus-doped carbon dots derived from *Ganoderma Lucidum* for bioimaging and high selective two nitrophenols detection. *Dyes and Pigments*, 178, 108316.
- Urano, Y., Asanuma, D., Hama, Y., Koyama, Y., Barrett, T., Kamiya, M., ... & Kobayashi, H. (2009). Selective molecular imaging of viable cancer cells with pH-activatable fluorescence probes. *Nature medicine*, 15(1), 104-109.
- Vandarkuzhali, S. A. A., Jeyalakshmi, V., Sivaraman, G., Singaravadivel, S., Krishnamurthy, K. R., & Viswanathan, B. (2017). Highly fluorescent carbon dots from pseudo-stem of banana plant: applications as nanosensor and bio-imaging agents. *Sensors and Actuators B: Chemical*, 252, 894-900.

- Venkateswarlu, S., Viswanath, B., Reddy, A. S., & Yoon, M. (2018). Fungus-derived photoluminescent carbon nanodots for ultrasensitive detection of Hg²⁺ ions and photoinduced bactericidal activity. *Sensors and Actuators B: Chemical*, 258, 172-183.
- Vikneswaran, R., Ramesh, S., & Yahya, R. J. M. L. (2014). Green synthesized carbon nanodots as a fluorescent probe for selective and sensitive detection of iron (III) ions. *Materials Letters*, 136, 179-182.
- Wang J, Li RS, Zhang HZ, Wang N, Zhang Z, Huang CZ. Highly fluorescent carbon dots as selective and visual probes for sensing copper ions in living cells via an electron transfer process. *Biosensors and Bioelectronics*. 2017 Nov 15;97:157-63.
- Wang M, Li Z, Zhang Y, Li Y, Li N, Huang D, Xu B. Interaction with teichoic acids contributes to highly effective antibacterial activity of graphene oxide on Gram-positive bacteria. *Journal of Hazardous Materials*. 2021 Jun 15;412:125333.
- Wang S, Li C, Qian M, Jiang H, Shi W, Chen J, Lächelt U, Wagner E, Lu W, Wang Y, Huang R. Augmented glioma-targeted theranostics using multifunctional polymer-coated carbon nanodots. *Biomaterials*. 2017 Oct 1;141:29-39.
- Wang W, Lu YC, Huang H, Wang AJ, Chen JR, Feng JJ (2015) Facile synthesis of N, S-codoped fluorescent carbon nanodots for fluorescent resonance energy transfer recognition of methotrexate with high sensitivity and selectivity. *Biosens Bioelectron* 64:517–522
- Wang, B., & Lu, S. (2022). The light of carbon dots: From mechanism to applications. *Matter*, 5(1), 110-149.
- Wang, J., Li, R. S., Zhang, H. Z., Wang, N., Zhang, Z., & Huang, C. Z. (2017). Highly fluorescent carbon dots as selective and visual probes for sensing copper ions in living cells via an electron transfer process. *Biosensors and Bioelectronics*, 97, 157-163.

- Wang, N., Wang, Y., Guo, T., Yang, T., Chen, M., & Wang, J. (2016). Green preparation of carbon dots with papaya as carbon source for effective fluorescent sensing of Iron (III) and Escherichia coli. *Biosensors and Bioelectronics*, 85, 68-75.
- Wang, W., Lu, Y. C., Huang, H., Wang, A. J., Chen, J. R., & Feng, J. J. (2015). Facile synthesis of N, S-codoped fluorescent carbon nanodots for fluorescent resonance energy transfer recognition of methotrexate with high sensitivity and selectivity. *Biosensors and Bioelectronics*, 64, 517-522.
- White, T. J., Bruns, T., Lee, S. J. W. T., & Taylor, J. (1990). Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. *PCR protocols: a guide to methods and applications*, 18(1), 315-322.
- World Health Organization, WHO., & World Health Organisation Staff. (2004). *Guidelines for drinking-water quality (Vol. 1)*. World Health Organization.
- Xavier, S. S. J., Siva, G., Annaraj, J., Kim, A. R., & Yoo, D. J. (2018). Sensitive and selective turn-off-on fluorescence detection of Hg²⁺ and cysteine using nitrogen doped carbon nanodots derived from citron and urine. *Sensors and Actuators B: Chemical*, 259, 1133-1143.
- Xia, C., Zhu, S., Feng, T., Yang, M., & Yang, B. (2019). Evolution and synthesis of carbon dots: from carbon dots to carbonized polymer dots. *Advanced Science*, 6(23), 1901316.
- Xu, M., He, G., Li, Z., He, F., Gao, F., Su, Y., ... & Zhang, Y. (2014). A green heterogeneous synthesis of N-doped carbon dots and their photoluminescence applications in solid and aqueous states. *Nanoscale*, 6(17), 10307-10315.
- Xu, Q., Liu, Y., Gao, C., Wei, J., Zhou, H., Chen, Y., ... & Xia, Z. (2015). Synthesis, mechanistic investigation, and application of photoluminescent sulfur and nitrogen co-doped carbon dots. *Journal of Materials Chemistry C*, 3(38), 9885-9893.

- Xu, X., Ray, R., Gu, Y., Ploehn, H. J., Gearheart, L., Raker, K., & Scrivens, W. A. (2004). Electrophoretic analysis and purification of fluorescent single-walled carbon nanotube fragments. *Journal of the American Chemical Society*, 126(40), 12736-12737.
- Xu, Y., Wu, M., Liu, Y., Feng, X. Z., Yin, X. B., He, X. W., & Zhang, Y. K. (2013). Nitrogen-doped carbon dots: a facile and general preparation method, photoluminescence investigation, and imaging applications. *Chemistry—A European Journal*, 19(7), 2276-2283.
- Xue, M., Zhan, Z., Zou, M., Zhang, L., & Zhao, S. (2016). Green synthesis of stable and biocompatible fluorescent carbon dots from peanut shells for multicolor living cell imaging. *New Journal of Chemistry*, 40(2), 1698-1703.
- Xue, M., Zou, M., Zhao, J., Zhan, Z., & Zhao, S. (2015). Green preparation of fluorescent carbon dots from lychee seeds and their application for the selective detection of methylene blue and imaging in living cells. *Journal of Materials Chemistry B*, 3(33), 6783-6789.
- Yan, F., Bai, Z., Zu, F., Zhang, Y., Sun, X., Ma, T., & Chen, L. (2019). Yellow-emissive carbon dots with a large Stokes shift are viable fluorescent probes for detection and cellular imaging of silver ions and glutathione. *Microchimica Acta*, 186(2), 1-11.
- Yan, X., Li, B., & Li, L. S. (2013). Colloidal graphene quantum dots with well-defined structures. *Accounts of chemical research*, 46(10), 2254-2262.
- Yang, C., Ogaki, R., Hansen, L., Kjems, J., & Teo, B. M. (2015). Theranostic carbon dots derived from garlic with efficient anti-oxidative effects towards macrophages. *RSC advances*, 5(118), 97836-97840.

- Yao, H., Li, J., Song, Y., Zhao, H., Wei, Z., Li, X., ... & Jiang, J. (2018). Synthesis of ginsenoside Re-based carbon dots applied for bioimaging and effective inhibition of cancer cells. *International Journal of Nanomedicine*, 13, 6249.
- Yuan Y, Guo B, Hao L, Liu N, Lin Y, Guo W, Li X, Gu B. Doxorubicin-loaded environmentally friendly carbon dots as a novel drug delivery system for nucleus targeted cancer therapy. *Colloids and Surfaces B: Biointerfaces*. 2017 Nov 1;159:349-59.
- Yuan, F., Yuan, T., Sui, L., Wang, Z., Xi, Z., Li, Y., ... & Yang, S. (2018). Engineering triangular carbon quantum dots with unprecedented narrow bandwidth emission for multicolored LEDs. *Nature communications*, 9(1), 1-11.
- Yue, G. G. L., Gomes, A. J., Saeed, M. E., Tsui, K. Y., Dawood, M., Drif, A. I., ... & Bik-San Lau, C. (2022). Identification of active components in *Andrographis paniculata* targeting on CD81 in esophageal cancer in vitro and in vivo. *Phytomedicine*, 154183.
- Zhan, Y., Geng, T., Liu, Y., Hu, C., Zhang, X., Lei, B., ... & Zou, B. (2018). Near-ultraviolet to near-infrared fluorescent nitrogen-doped carbon dots with two-photon and piezochromic luminescence. *ACS applied materials & interfaces*, 10(33), 27920-27927.
- Zhang M, Ju H, Zhang L, Sun M, Zhou Z, Dai Z, Zhang L, Gong A, Wu C, Du F. Engineering iodine-doped carbon dots as dual-modal probes for fluorescence and X-ray CT imaging. *International journal of nanomedicine*. 2015;10:6943.
- Zhang, B., Duan, Q., Zhao, H., Zhang, Y., Li, X., Xi, Y., ... & Sang, S. (2021). Application of carbon dots in nucleolus imaging to distinguish cancerous cells from normal cells. *Sensors and Actuators B: Chemical*, 329, 129156.

- Zhang, J., Cheng, F., Li, J., Zhu, J. J., & Lu, Y. (2016). Fluorescent nanoprobe for sensing and imaging of metal ions: Recent advances and future perspectives. *Nano today*, 11(3), 309-329.
- Zhang, J., Yuan, Y., Liang, G., & Yu, S. H. (2015). Scale-up synthesis of fragrant nitrogen-doped carbon dots from bee pollens for bioimaging and catalysis. *Advanced Science*, 2(4), 1500002.
- Zhang, M., Su, R., Zhong, J., Fei, L., Cai, W., Guan, Q., ... & Xu, Q. (2019). Red/orange dual-emissive carbon dots for pH sensing and cell imaging. *Nano Research*, 12(4), 815-821.
- Zhang, X., Jiang, M., Niu, N., Chen, Z., Li, S., Liu, S., & Li, J. (2018). Natural-product-derived carbon dots: from natural products to functional materials. *ChemSusChem*, 11(1), 11-24.
- Zhao, X., Liao, S., Wang, L., Liu, Q., & Chen, X. (2019). Facile green and one-pot synthesis of purple perilla derived carbon quantum dot as a fluorescent sensor for silver ion. *Talanta*, 201, 1-8.
- Zheng, L., Chi, Y., Dong, Y., Lin, J., & Wang, B. (2009). Electrochemiluminescence of water-soluble carbon nanocrystals released electrochemically from graphite. *Journal of the American Chemical Society*, 131(13), 4564-4565.
- Zheng, M., Ruan, S., Liu, S., Sun, T., Qu, D., Zhao, H., ... & Sun, Z. (2015). Self-targeting fluorescent carbon dots for diagnosis of brain cancer cells. *ACS nano*, 9(11), 11455-11461.
- Zheng, X. T., Ananthanarayanan, A., Luo, K. Q., & Chen, P. (2015). Glowing graphene quantum dots and carbon dots: properties, syntheses, and biological applications. *small*, 11(14), 1620-1636.

- Zhou, C., Li, H., Liu, Y., & Wang, K. (2022). Design and Synthesis of Dual-Responsive Carbon Nanodots Loaded with Cisplatin for Targeted Therapy of Lung Cancer Therapy and Nursing Care. *Journal of Cluster Science*, 33(1), 331-338.
- Zhou, J., Sheng, Z., Han, H., Zou, M., & Li, C. (2012). Facile synthesis of fluorescent carbon dots using watermelon peel as a carbon source. *Materials Letters*, 66(1), 222-224.
- Zhu Y, Murali S, Cai W, Li X, Suk JW, Potts JR, Ruoff RS. Graphene and graphene oxide: synthesis, properties, and applications. *Advanced materials*. 2010 Sep 15;22(35):3906-24.
- Zhu, J., Shao, H., Bai, X., Zhai, Y., Zhu, Y., Chen, X., ... & Song, H. (2018). Modulation of the photoluminescence in carbon dots through surface modification: from mechanism to white light-emitting diodes. *Nanotechnology*, 29(24), 245702.
- Zhu, L., Yin, Y., Wang, C. F., & Chen, S. (2013). Plant leaf-derived fluorescent carbon dots for sensing, patterning and coding. *Journal of Materials Chemistry C*, 1(32), 4925-4932.
- Zhu, S., Song, Y., Zhao, X., Shao, J., Zhang, J., & Yang, B. (2015). The photoluminescence mechanism in carbon dots (graphene quantum dots, carbon nanodots, and polymer dots): current state and future perspective. *Nano research*, 8(2), 355-381.



List of Publications from Thesis

1. **Gaurav Gopal Naik**, Tarun Minocha, Abhineet Verma, Sanjeev Kumar Yadav, Satyen Saha, Ashish Kumar Agrawal, Sanjay Singh, and Alakh N. Sahu. "Asparagus racemosus root-derived carbon nanodots as a nano-probe for biomedical applications." *Journal of Materials Science* (2022). 57(43):20380-401. [IF: 4.682] [RESEARCH PAPER]
2. **Gaurav Gopal Naik**, Md Bayazeed Alam, Vivek Pandey, Debadatta Mohapatra, Pawan K. Dubey, Avanish S. Parmar, and Alakh N. Sahu. "Multi-Functional carbon dots from an Ayurvedic medicinal plant for cancer cell Bioimaging Applications." *Journal of fluorescence* (2020): 1-12. [IF: 2.525] [RESEARCH PAPER]
3. **Gaurav Gopal Naik**, Md Bayazeed Alam, Vivek Pandey, Pawan Kumar Dubey, Avanish S. Parmar, and Alakh N. Sahu. "Pink Fluorescent Carbon Dots Derived from the Phytomedicine for Breast Cancer Cell Imaging." *ChemistrySelect* 5, no. 23 (2020): 6954-6960. [IF: 2.307] [RESEARCH PAPER]
4. **Gaurav Gopal Naik**, Jainam Shah, Arun Kumar Balasubramaniam, and Alakh Sahu. "Applications of natural product-derived carbon dots in cancer biology." *Nanomedicine* 16, no. 7 (2021): 587-608. [IF: 6.096] [REVIEW PAPER]

Plant authentication certificate for *Andrographis paniculata*



Prof. Nawal Kishore Dubey
FNASc, FNAAS

AN INSTITUTION OF NATIONAL IMPORTANCE ESTABLISHED BY AN ACT OF PARLIAMENT


Date: January 21, 2020

To Whom It May Concern

This is to certify that the following plant specimen collected by **Gaurav Gopal Naik**, Research Fellow, Department of Pharmaceutical Engineering and Technology, I.I.T., B.H.U., Varanasi, have been authenticated by me and the voucher specimens have been kept in our Herbarium.

1. *Andrographis paniculata* (Burm.) Wall. (Voucher specimen no. Acantha. 2020/1)

Acanthaceae


(N K Dubey)

Prof. N.K. Dubey, FNASc, FNAAS
Centre of Advanced Study in Botany
Institute of Science
Banaras Hindu University
Varanasi-221005

Plant authentication certificate for *Asparagus racemosus*



Prof. Nawal Kishore Dubey
FNASc, FNAAS

AN INSTITUTION OF NATIONAL IMPORTANCE ESTABLISHED BY AN ACT OF PARLIAMENT

Date: November 02, 2021

To Whom It May Concern

This is to certify that the following plant specimens collected by **Mr. Gaurav Gopal Naik**, Research Scholar, Department of Pharmaceutical Engineering and Technology, Indian Institute of Technology, Banaras Hindu University, Varanasi, has been authenticated by me and the voucher specimens has been kept in our Herbarium.

1. *Asparagus racemosus* Will. (Voucher specimen no. Lilia. 2021/5)

Liliaceae

(Prof. N. K. Dubey)
Prof. N.K. Dubey, FNASc, FNAAS
Centre of Advanced Study in Botany
Institute of Science
Banaras Hindu University
Varanasi-221005

IAEC approval certificate



भारतीय
प्रौद्योगिकी
संस्थान
INDIAN
INSTITUTE OF
TECHNOLOGY
BANARAS HINDU UNIVERSITY

Department of Pharmaceutical Engineering & Technology

Regd. No. 2123/GO/Re/S/21/CPCSEA

Date: 03 May, 2022

IAEC Approval Number: **IIT(BHU)/IAEC/2022/003**

CERTIFICATE

This is to certify that the project proposal entitled "**Medicinal plants derived Carbon nanodots for Multifaceted applications**" submitted by **Mr. Gourav Gopal Naik** under supervision of **Dr. Alakh Niranjana Sahu** has been approved/recommended by the IAEC of *Indian Institute of Technology, Banaras Hindu University, Varanasi* in its meeting dated **03/05/2022** and has been sanctioned **35 Male/Female Albino Mice (20-25 gm)** under this proposal for a duration of **Twelve (12) months.**

Prof. Sushant Kumar
Shrivastava

Name & Signature

Chairman

Dr. Vinod Tiwari

Name & Signature

Member Secretary

Dr. Shesh Narayan Mishra

Name & Signature

Main Nominee of CPCSEA

Note: The CPCSEA Guideline should be followed strictly while handling the animals.