REFERENCES

Abdel-Fattah, T. M., & Wixtrom, A. (2014). Nanoparticles and catalysis. John Wiley & Sons.

Acharyya, S. S., Ghosh, S., Adak, S., Tripathi, D., & Bal, R. (2015). Fabrication of $CuCr_2O_4$ spinel nanoparticles: A potential catalyst for the selective oxidation of cycloalkanes via activation of C sp^3– H bond. *Catalysis Communications*, *59*, 145-150.

Aditya, T., Pal, A., & Pal, T. (2015). Nitroarene reduction: a trusted model reaction to test nanoparticle catalysts. *Chemical Communications*, *51*(46), 9410-9431.

Aguey-Zinsou, K. F., & Ares-Fernández, J. R. (2010). Hydrogen in magnesium: new perspectives toward functional stores. *Energy & Environmental Science*, *3*(5), 526-543.

Ahmed, A., Elvati, P., & Violi, A. (2015). Size-and phase-dependent structure of copper (II) oxide nanoparticles. *RSC Advances, 5(44),* 35033-35041.

Alla, S. K., Verma, A. D., Kumar, V., Mandal, R. K., Sinha, I., & Prasad, N. K. (2016). solvothermal synthesis of CuO–MgO nanocomposite particles and their catalytic applications. *RSC Advances*, *6*(66), 61927-61933.

Alonso, F., Moglie, Y., Radivoy, G., & Yus, M. (2011). Multicomponent click synthesis of 1, 2, 3-triazoles from epoxides in water catalyzed by copper nanoparticles on activated carbon. *The Journal of organic chemistry*, *76(20*), 8394-8405.

Alves, D. C., Silva, R., Voiry, D., Asefa, T., & Chhowalla, M. (2015). Copper nanoparticles stabilized by reduced graphene oxide for CO_2 reduction reaction. *Materials for Renewable and Sustainable Energy*, 4(1), 2.

Antonels, N. C., & Meijboom, R. (2013). Preparation of well-defined dendrimer Encapsulated ruthenium nanoparticles and their evaluation in the reduction of 4-nitrophenol according to the Langmuir–Hinshelwood approach. *Langmuir*, *29*(44), 13433-13442.

Aslam, U., Chavez, S., & Linic, S. (2017). Controlling energy flow in multimetallic nanostructures for plasmonic catalysis. *Nature nanotechnology*.

Astruc, D. (Ed.). (2008). *Nanoparticles and catalysis*. John Wiley & Sons.

Bang, J. H., & Suslick, K. S. (2010). Applications of ultrasound to the synthesis of nanostructured materials. *Advanced materials*, *22*(10), 1039-1059.

Bansal, A., Sekhon, J. S., & Verma, S. S. (2014). Scattering efficiency and LSPR tunability of bimetallic Ag, Au, and Cu nanoparticles. *Plasmonics*, *9*(1), 143-150.

Barrabés, N., Just, J., Dafinov, A., Medina, F., Fierro, J. L. G., Sueiras, J. E., Salagre, P., & Cesteros, Y. (2006). Catalytic reduction of nitrate on Pt-Cu and Pd-Cu on active carbon using continuous reactor: The effect of copper nanoparticles. *Applied Catalysis B: Environmental*, *62*(1), 77-85.

Baruah, B., Gabriel, G. J., Akbashev, M. J., & Booher, M. E. (2013). Facile synthesis of silver nanoparticles stabilized by cationic polynorbornenes and their catalytic activity in 4-nitrophenol reduction. *Langmuir*, *29*(13), 4225-4234.

Battaut, E. (1962). Particle sizes and their statistics from Debye-Sherrer lines. *International Tables for X-Ray Crystallography*, 318-323.

Bettini, S., Pagano, R., Valli, L., & Giancane, G. (2014). Drastic nickel ion removal from aqueous solution by curcumin-capped Ag nanoparticles. *Nanoscale*, *6*(17), 10113-10117.

Bhunia, S. K., & Jana, N. R. (2014). Reduced graphene oxide-silver nanoparticle composite as visible light photocatalyst for degradation of colorless endocrine disruptors. *ACS applied materials & interfaces*, *6*(22), 20085-20092.

Bingwa, N., & Meijboom, R. (2014). Kinetic evaluation of dendrimer-encapsulated palladium nanoparticles in the 4-nitrophenol reduction reaction. *The Journal of Physical Chemistry C*, *118*(34), 19849-19858.

Blosi, M., Albonetti, S., Ortelli, S., Costa, A. L., Ortolani, L., & Dondi, M. (2014). Green and easily scalable microwave synthesis of noble metal nanosols (Au, Ag, Cu, Pd) usable as catalysts. *New Journal of Chemistry*, *38*(4), 1401-1409.

Bond, G. C., Sermon, P. A., Webb, G., Buchanan, D. A., & Wells, P. B. (1973). Hydrogenation over supported gold catalysts. *Journal of the Chemical Society, Chemical Communications*, (13), 444b-445.

Bonet, F., Delmas, V., Grugeon, S., Urbina, R. H., Silvert, P. Y., & Tekaia-Elhsissen, K. (1999). Synthesis of monodisperse Au, Pt, Pd, Ru and Ir nanoparticles in ethylene glycol. *Nanostructured Materials*, *11*(8), 1277-1284.

Bönnemann, H., Brijoux, W., Brinkmann, R., Joußen, T., Korall, B., & Dinjus, E. (1991). Formation of colloidal transition metals in organic phases and their application in catalysis. *Angewandte Chemie International Edition*, *30*(10), 1312-1314.

Bönnemann, H., Britz, P., & Vogel, W. (1998). Structure and chemical composition of a surfactant-stabilized Pt_3Sn alloy colloid. *Langmuir*, *14*(23), 6654-6657.

Buckley, B. R., Butterworth, R., Dann, S. E., Heaney, H., & Stubbs, E. C. (2014). "Copper-in-Charcoal" Revisited: Delineating the Nature of the Copper Species and Its Role in Catalysis. *ACS Catalysis*, *5*(2), 793-796.

Bus, E., & van Bokhoven, J. A. (2007). Electronic and geometric structures of supported platinum, gold, and platinum-gold catalysts. *The Journal of Physical Chemistry C*, *111*(27), 9761-9768.

Cabrera, L., Gutierrez, S., Menendez, N., Morales, M. P., & Herrasti, P. (2008). Magnetite nanoparticles: electrochemical synthesis and characterization. *Electrochimica Acta*, *53*(8), 3436-3441.

Calle-Vallejo, F., Loffreda, D., Koper, M. T., & Sautet, P. (2015). Introducing structural sensitivity into adsorption–energy scaling relations by means of coordination numbers. *Nature chemistry*, *7*(5), 403-410.

Calle-Vallejo, F., Martínez, J. I., García-Lastra, J. M., Sautet, P., & Loffreda, D. (2014). Fast prediction of adsorption properties for platinum nanocatalysts with generalized coordination numbers. *Angewandte Chemie International Edition*, *53*(32), 8316-8319.

Camardese, J., McCalla, E., Abarbanel, D. W., & Dahn, J. R. (2014). Determination of Shell Thickness of Spherical Core-Shell $Ni_xMn_{1-x}(OH)_2$ Particles via Absorption Calculations of X-Ray Diffraction Patterns. *Journal of The Electrochemical Society*, *161*(5), A814-A820.

Cao, M., Hu, C., Wang, Y., Guo, Y., Guo, C., & Wang, E. (2003). A controllable synthetic route to Cu, Cu_2O, and CuO nanotubes and nanorods. *Chemical Communications*, (15), 1884-1885.

Cao, S., Tao, F. F., Tang, Y., Li, Y., & Yu, J. (2016). Size-and shape-dependent catalytic performances of oxidation and reduction reactions on nanocatalysts. *Chemical Society Reviews*, *45*(17), 4747-4765.

Chadwick, J. C., Duchateau, R., Freixa, Z., & Van Leeuwen, P. W. (2011). *Homogeneous Catalysts: Activity-Stability-Deactivation*. John Wiley & Sons.characterization, and their antibacterial activity. *J. Phys. Chem. B*, *110*(33), 16248-16253.

Chang, G., Luo, Y., Lu, W., Qin, X., Asiri, A. M., Al-Youbi, A. O., & Sun, X. (2012). Ag nanoparticles decorated polyaniline nanofibers: synthesis, characterization, and applications toward catalytic reduction of 4-nitrophenol and electrochemical detection of H_2O_2 and glucose. *Catalysis Science & Technology*, *2*(4), 800-806.

Chang, S. J., Tung, C. A., Chen, B. W., Chou, Y. C., & Li, C. C. (2013). Synthesis of non-oxidative copper nanoparticles. *RSC Advances*, *3*(46), 24005-24008.

Chastellain, M., Petri, A., & Hofmann, H. (2004). Particle size investigations of a multistep synthesis of PVA coated superparamagnetic nanoparticles. *Journal of colloid and interface science*, *278*(2), 353-360.

Che, M., & Bennett, C. O. (1989). The influence of particle size on the catalytic properties of supported metals. *Advances in Catalysis*, *36*, 55-172.

Chechik, V., & Crooks, R. M. (2000). Dendrimer-encapsulated Pd nanoparticles as fluorous phase-soluble catalysts. *Journal of the American Chemical Society*, *122*(6), 1243-1244.

Chen, C. S., Wu, J. H., & Lai, T. W. (2010a). Carbon dioxide hydrogenation on Cu nanoparticles. *The Journal of Physical Chemistry C*, *114*(35), 15021-15028.

Chen, H., Kou, X., Yang, Z., Ni, W., & Wang, J. (2008). Shape-and size-dependent refractive index sensitivity of gold nanoparticles. *Langmuir*, *24*(10), 5233-5237.

Chen, J., Lim, B., Lee, E. P., & Xia, Y. (2009). Shape-controlled synthesis of platinum nanocrystals for catalytic and electro catalytic applications. *Nano Today*, *4*(1), 81-95.

Chen, M. S., & Goodman, D. W. (2004). The structure of catalytically active gold on titania. *Science, 306*(5694), 252-255.

Chen, X., Shen, S., Guo, L., & Mao, S. S. (2010b). Semiconductor-based photocatalytic hydrogen generation. *Chemical reviews*, *110*(11), 6503-6570.

Chen, X., Wu, G., Chen, J., Chen, X., Xie, Z., & Wang, X. (2011). Synthesis of “clean” and well-dispersive Pd nanoparticles with excellent electrocatalytic property on graphene oxide. *Journal of the American Chemical Society*, *133*(11), 3693-3695.

Christopher, P., Ingram, D. B., & Linic, S. (2010). Enhancing photochemical activity of semiconductor nanoparticles with optically active Ag nanostructures: photochemistry mediated by Ag surface plasmons. *The Journal of Physical Chemistry C*, *114*(19), 9173-9177.

Christopher, P., Xin, H., & Linic, S. (2011). Visible-light-enhanced catalytic oxidation reactions on plasmonic silver nanostructures. *Nature chemistry*, *3*(6), 467-472.

Cleveland, C. L., Landman, U., Schaaff, T. G., Shafigullin, M. N., Stephens, P. W., & Whetten, R. L. (1997). Structural evolution of smaller gold nanocrystals: The truncated decahedral motif. *Physical review letters*, *79*(10), 1873.

Corma, A., Iglesias, M., Llabrés i Xamena, F. X., & Sanchez, F. (2010). Cu and Au metal–organic frameworks bridge the gap between homogeneous and heterogeneous catalysts for alkene cyclopropanation reactions. *Chemistry-A European Journal*, *16*(32), 9789-9795.

Cui, X., Deng, Y., & Shi, F. (2013). Reductive N-alkylation of nitro compounds to N-alkyl and N, N-dialkyl amines with glycerol as the hydrogen source. *ACS Catalysis*, *3*(5), 808-811.

Cullity, B. D., Cullity, S. R., & Stock, S. R. (2001). *Elements of X-ray Diffraction* (No. Sirsi) i9780201610918).

Darabdhara, G., Sharma, B., Das, M. R., Boukherroub, R., & Szunerits, S. (2017). Cu-Ag bimetallic nanoparticles on reduced graphene oxide nanosheets as peroxidase mimic for glucose and ascorbic acid detection. *Sensors And Actuators B: Chemical*, *238*, 842-851.

Decan, M. R., Impellizzeri, S., Marin, M. L., & Scaiano, J. C. (2014). Copper nanoparticle heterogeneous catalytic ‘click’ cycloaddition confirmed by single-molecule spectroscopy. *Nature communications*, *5*, 4612.

Deka, P., Deka, R. C., & Bharali, P. (2014). In situ generated copper nanoparticle catalyzed reduction of 4-nitrophenol. *New Journal of Chemistry*, *38*(4), 1789-1793.

Delgado, J. A., Claver, C., Castillón, S., Curulla-Ferré, D., Ordomsky, V. V., & Godard, C. (2016). Effect of polymeric stabilizers on Fischer–Tropsch synthesis catalyzed by cobalt nanoparticles supported on TiO_2. *Journal of Molecular Catalysis A: Chemical*, *417*, 43-52.

Deng, D., Jin, Y., Cheng, Y., Qi, T., & Xiao, F. (2013). Copper nanoparticles: aqueous phase synthesis and conductive films fabrication at low sintering temperature. *ACS applied materials & interfaces*, *5*(9), 3839-3846.

Deplanche, K., Merroun, M. L., Casadesus, M., Tran, D. T., Mikheenko, I. P., Bennett, J. A.,Zhu, J., Jones, I. P., Attard, G. A., Wood, J., Selenska-Pobell, S., & Macaskie, L. E. (2012). Microbial synthesis of core/shell gold/palladium nanoparticles for applications in green chemistry. *Journal of The Royal Society Interface*, *9*(72), 1705-1712.

Devi, H. S., Singh, N. R., & Singh, T. D. (2016). A benign approach for synthesis of silver nanoparticles and their application in treatment of organic pollutant. *Arabian Journal for Science and Engineering*, *41*(6), 2249-2256.

Dhakshinamoorthy, A., Navalon, S., Sempere, D., Alvaro, M., & Garcia, H. (2013). Reduction of alkenes catalyzed by copper nanoparticles supported on diamond nanoparticles. *Chemical Communications*, *49*(23), 2359-2361.

Díaz-Álvarez, A. E., Francos, J., Lastra-Barreira, B., Crochet, P., & Cadierno, V. (2011). Glycerol and derived solvents: new sustainable reaction media for organic synthesis. *Chemical Communications*, *47*(22), 6208-6227.

Dieckmann, M. S., & Gray, K. A. (1996). A comparison of the degradation of 4-nitrophenol via direct and sensitized photocatalysis in TiO_2 slurries. *Water Research*, *30*(5), 1169-1183.

Donate, P. M. (2014). Green synthesis from biomass. *Chemical and Biological Technologies in Agriculture*, *1*(1), 4.

Dong, X. Y., Gao, Z. W., Yang, K. F., Zhang, W. Q., & Xu, L. W. (2015). Nanosilver as a new generation of silver catalysts in organic transformations for efficient synthesis of fine chemicals. *Catalysis Science & Technology*, *5*(5), 2554-2574.

Dragoi, B., Ungureanu, A., Chirieac, A., Hulea, V., Royer, S., & Dumitriu, E. (2013). Enhancing the performance of SBA-15-supported copper catalysts by chromium addition for the chemoselective hydrogenation of trans-cinnamaldehyde. *Catalysis Science & Technology*, *3*(9), 2319-2329.

Duan, M. Y., Liang, R., Tian, N., Li, Y. J., & Yeung, E. S. (2013). Self-assembly of Au–Pt core–shell nanoparticles for effective enhancement of methanol electrooxidation. *Electrochimica Acta*, *87*, 432-437.

Ducamp-Sanguesa, C., Herrera-Urbina, R., & Figlarz, M. (1992). Synthesis and characterization of fine and monodisperse silver particles of uniform shape. *Journal of Solid State Chemistry*, *100*(2), 272-280.

Dutta, S., & Pal, S. (2014). Promises in direct conversion of cellulose and lignocellulosic biomass to chemicals and fuels: Combined solvent–nanocatalysis approach for biorefinary. *Biomass and bioenergy*, *62*, 182-197.

Dwyer, K., Hosseinian, F., & Rod, M. (2014). The market potential of grape waste alternatives. *Journal of Food Research*, *3*(2), 91.

Egerton, R., Physical principles of electron microscopy, Springer, ISBN, 0-387-25800-0, 2005.

Ely, T. O., Amiens, C., Chaudret, B., Snoeck, E., Verelst, M., Respaud, M., & Broto, J. M. (1999). Synthesis of nickel nanoparticles. Influence of aggregation induced by modification of poly (vinylpyrrolidone) chain length on their magnetic properties. *Chemistry of materials*, *11*(3), 526-529.

Engelbrekt, C., Sørensen, K. H., Zhang, J., Welinder, A. C., Jensen, P. S., & Ulstrup, J. (2009). Green synthesis of gold nanoparticles with starch–glucose and application in bioelectrochemistry. *Journal of materials Chemistry*, *19*(42), 7839-7847.

Faraday, M. (1857). The Bakerian lecture: experimental relations of gold (and other metals) to light. *Philosophical Transactions of the Royal Society of London*, *147*, 145-181.

Feng, L., Gao, G., Huang, P., Wang, X., Zhang, C., Zhang, J., Guo, S., & Cui, D. (2011). Preparation of Pt Ag alloy nanoisland/graphene hybrid composites and its high stability and catalytic activity in methanol electro-oxidation. *Nanoscale research letters*, *6*(1), 551.

Feng, X., Jiang, K., Fan, S., & Kanan, M. W. (2015). Grain-boundary-dependent CO_2 electroreduction activity. *Journal of the American Chemical Society*, *137*(14), 4606-4609.

Feng, X., Jiang, K., Fan, S., & Kanan, M. W. (2016). A direct grain-boundary-activity correlation for CO electro reduction on Cu nanoparticles. *ACS central science*, *2*(3), 169-174.

Fenger, R., Fertitta, E., Kirmse, H., Thünemann, A. F., & Rademann, K. (2012). Size dependent catalysis with CTAB-stabilized gold nanoparticles. *Physical Chemistry Chemical Physics*, *14*(26), 9343-9349.

Fievet, F., Lagier, J. P., & Figlarz, M. (1989b). Preparing monodisperse metal powders in micrometer and submicrometer sizes by the polyol process. *Mrs Bulletin*, *14*(12), 29-34.

Fievet, F., Lagier, J. P., Blin, B., Beaudoin, B., & Figlarz, M. (1989a). Homogeneous and heterogeneous nucleations in the polyol process for the preparation of micron and submicron size metal particles. *Solid State Ionics*, *32*, 198-205.

Fu, G. T., Ma, R. G., Gao, X. Q., Chen, Y., Tang, Y. W., Lu, T. H., & Lee, J. M. (2014). Hydrothermal synthesis of Pt–Ag alloy nano-octahedra and their enhanced electrocatalytic activity for the methanol oxidation reaction. *Nanoscale*, *6*(21), 12310-12314.

Furlong, D. N., Launikonis, A., Sasse, W. H., & Sanders, J. V. (1984). Colloidal platinum sols. Preparation, characterization and stability towards salt. *Journal of the Chemical Society, Faraday Transactions 1: Physical Chemistry in Condensed Phases*, *80*(3), 571-588.

Ganesh, T., Kim, J. H., Yoon, S. J., Kil, B. H., Maldar, N. N., Han, J. W., & Han, S. H. (2010). Photoactive curcumin-derived dyes with surface anchoring moieties used in ZnO nanoparticle-based dye-sensitized solar cells. *Materials Chemistry and Physics*, *123*(1), 62-66.

Gao, C., Lu, Z., Liu, Y., Zhang, Q., Chi, M., Cheng, Q., & Yin, Y. (2012). Highly stable silver nanoplates for surface plasmon resonance biosensing. *Angewandte Chemie International Edition*, *51*(23), 5629-5633.

Gao, Z., Su, R., Huang, R., Qi, W., & He, Z. (2014). Glucomannan-mediated facile synthesis of gold nanoparticles for catalytic reduction of 4-nitrophenol. *Nanoscale research letters*, *9*(1), 404.

Gawande, M. B., Goswami, A., Felpin, F. X., Asefa, T., Huang, X., Silva, R., Zou, X., Zboril, R., & Varma, R. S. (2016). Cu and Cu-based nanoparticles: synthesis and applications in catalysis. *Chemical reviews*, *116*(6), 3722-3811.

Gawande, M. B., Rathi, A. K., Branco, P. S., Nogueira, I. D., Velhinho, A., Shrikhande, J. J., Indulkar, U. U., Jayaram, R. V., Ghumman, C. A., Bundaleski, O., & Teodoro, O. M. (2012). Regio- and Chemoselective Reduction of Nitroarenes and Carbonyl Compounds over Recyclable Magnetic Ferrite - Nickel Nanoparticles (Fe_3O_4 - Ni) by Using Glycerol as a Hydrogen Source. *Chemistry-A European Journal*, *18*(40), 12628-12632.

Georgiev, V., Ananga, A., & Tsolova, V. (2014). Recent advances and uses of grape flavonoids as nutraceuticals. *Nutrients*, *6*(1), 391-415.

Ghosh, S. K., & Pal, T. (2007). Interparticle coupling effect on the surface plasmon resonance of gold nanoparticles: from theory to applications. *Chem. Rev*, *107*(11), 4797-4862.

Ghosh, S. K., Mandal, M., Kundu, S., Nath, S., & Pal, T. (2004). Bimetallic Pt–Ni nanoparticles can catalyze reduction of aromatic nitro compounds by sodium borohydride in aqueous solution. *Applied Catalysis A: General*, *268*(1), 61-66.

Gilroy, K. D., Ruditskiy, A., Peng, H. C., Qin, D., & Xia, Y. (2016). Bimetallic nanocrystals: Syntheses, properties, and applications. *Chem. Rev*, *116*(18), 10414-10472.

Goia, D. V. (2004). Preparation and formation mechanisms of uniform metallic particles in homogeneous solutions. *Journal of Materials Chemistry*, *14*(4), 451-458.

Grouchko, M., Kamyshny, A., Ben-Ami, K., & Magdassi, S. (2009). Synthesis of copper nanoparticles catalyzed by pre-formed silver nanoparticles. *Journal of Nanoparticle Research*, *11*(3), 713-716.

Gu, X., Qi, W., Xu, X., Sun, Z., Zhang, L., Liu, W., Pan, X., & Su, D. (2014). Covalently functionalized carbon nanotube supported Pd nanoparticles for catalytic reduction of 4-nitrophenol. *Nanoscale*, *6*(12), 6609-6616.

Gu, Y., & Jérôme, F. (2010). Glycerol as a sustainable solvent for green chemistry. *Green Chemistry*, *12*(7), 1127-1138.

Guerra, J., & Herrero, M. A. (2010). Hybrid materials based on Pd nanoparticles on carbon nanostructures for environmentally benign C–C coupling chemistry. *Nanoscale*, *2*(8), 1390-1400.

Guo, L., Jackman, J. A., Yang, H. H., Chen, P., Cho, N. J., & Kim, D. H. (2015). Strategies for enhancing the sensitivity of plasmonic nanosensors. *Nano Today*, *10*(2), 213-239.

Guo, X., Hao, C., Jin, G., Zhu, H. Y., & Guo, X. Y. (2014). Copper nanoparticles on graphene support: an efficient photocatalyst for coupling of nitroaromatics in visible light. *Angewandte Chemie International Edition*, *53*(7), 1973-1977.

Haes, A. J., Haynes, C. L., McFarland, A. D., Schatz, G. C., Van Duyne, R. P., & Zou, S. (2005). Plasmonic materials for surface-enhanced sensing and spectroscopy. *MRS bulletin*, *30*(5), 368-375.

Hajfathalian, M., Gilroy, K. D., Yaghoubzade, A., Sundar, A., Tan, T., Hughes, R. A., & Neretina, S. (2015). Photocatalytic enhancements to the reduction of 4-nitrophenol by resonantly excited triangular gold–copper nanostructures. *The Journal of Physical Chemistry C*, *119*(30), 17308-17315.

Han, Z., Li, S., Jiang, F., Wang, T., Ma, X., & Gong, J. (2014). Propane dehydrogenation over Pt–Cu bimetallic catalysts: the nature of coke deposition and the role of copper. *Nanoscale*, *6*(17), 10000-10008.

Harriman, A., Thomas, J. M., & Milward, G. R. (1987). Catalytic and structural properties of iridium-iridium dioxide colloids. *New journal of chemistry*, *11*(11-12), 757-762.

Haruta, M. (2002). Catalysis of gold nanoparticles deposited on metal oxides. *Cattech*, *6*(3), 102-115.

Hashmi, A. S. K., & Hutchings, G. J. (2006). Gold catalysis. *Angewandte Chemie International Edition*, *45*(47), 7896-7936.

He, D., Miller, C. J., & Waite, T. D. (2014a). Fenton-like zero-valent silver nanoparticle-mediated hydroxyl radical production. *Journal of Catalysis, 317,* 198-205.

He, R., Wang, Y. C., Wang, X., Wang, Z., Liu, G., Zhou, W., Wen, L., Li, Q., Wang, X., Chen, X., Zeng, J., & Hou, J. G. (2014b). Facile synthesis of pentacle gold–copper alloy nanocrystals and their plasmonic and catalytic properties. *Nature communications*, *5*.

Hekmat, D., Bauer, R., & Fricke, J. (2003). Optimization of the microbial synthesis of dihydroxyacetone from glycerol with Gluconobacter oxydans. *Bioprocess and biosystems engineering*, *26*(2), 109-116.

Henglein, A. (1989). Small-particle research: physicochemical properties of extremely small colloidal metal and semiconductor particles. *Chemical Reviews*, *89*(8), 1861-1873.

Henglein, A. (1993). Physicochemical properties of small metal particles in solution:" microelectrode" reactions, chemisorption, composite metal particles, and the atom-to-metal transition. *The Journal of Physical Chemistry*, *97*(21), 5457-5471.

Hervés, P., Pérez-Lorenzo, M., Liz-Marzán, L. M., Dzubiella, J., Lu, Y., & Ballauff, M. (2012). Catalysis by metallic nanoparticles in aqueous solution: model reactions. *Chemical Society Reviews*, *41*(17), 5577-5587.

Hsu, K. C., & Chen, D. H. (2014). Green synthesis and synergistic catalytic effect of Ag/reduced graphene oxide nanocomposite. *Nanoscale research letters*, *9*(1), 484

Hu, Q., Fan, G., Yang, L., & Li, F. (2014). Aluminum- Doped Zirconia- Supported Copper Nanocatalysts: Surface Synergistic Catalytic Effects in the Gas- Phase Hydrogenation of Esters. *ChemCatChem*, *6*(12), 3501-3510.

Huang, H., & Wang, X. (2014). Recent progress on carbon-based support materials for electrocatalysts of direct methanol fuel cells. *Journal of Materials Chemistry A*, *2*(18), 6266-6291.

Huang, J., Vongehr, S., Tang, S., Lu, H., & Meng, X. (2010). Highly catalytic Pd−Ag bimetallic dendrites. *The Journal of Physical Chemistry C*, *114*(35), 15005-15010.

Huang, X., Tang, S., Liu, B., Ren, B., & Zheng, N. (2011). Enhancing the Photothermal Stability of Plasmonic Metal Nanoplates by a Core- Shell Architecture. *Advanced Materials*, *23*(30), 3420-3425.

Hutchings, G. (2013). *Nanocatalysis: Synthesis and applications*. John Wiley & Sons. Inc.

Hutter, E., & Fendler, J. H. (2004). Exploitation of localized surface plasmon resonance. *Advanced materials*, *16*(19), 1685-1706.

Hvolbæk, B., Janssens, T. V., Clausen, B. S., Falsig, H., Christensen, C. H., & Nørskov, J. K. (2007). Catalytic activity of Au nanoparticles. *Nano Today*, *2*(4), 14-18.

Ibhadon, A. O., & Fitzpatrick, P. (2013). Heterogeneous photocatalysis: recent advances and applications. *Catalysts*, *3*(1), 189-218.

Ishida, T., & Haruta, M. (2007). Gold catalysts: towards sustainable chemistry. *Angewandte Chemie International Edition*, *46*(38), 7154-7156.

Janardhanan, S. K., Ramasamy, I., & Nair, B. U. (2008). Synthesis of iron oxide nanoparticles using chitosan and starch templates. *Transition Metal Chemistry*, *33*(1), 127-131.

Janssens, T. V., Carlsson, A., Puig-Molina, A., & Clausen, B. S. (2006). Relation between nanoscale Au particle structure and activity for CO oxidation on supported gold catalysts. *Journal of Catalysis*, *240*(2), 108-113.

Jiang, H. L., Akita, T., Ishida, T., Haruta, M., & Xu, Q. (2011). Synergistic catalysis of Au@Ag core-shell nanoparticles stabilized on metal-organic framework. *Journal of the American Chemical Society*, *133*(5), 1304-1306.

Jiang, H., Chen, Z., Cao, H., & Huang, Y. (2012). Peroxidase-like activity of chitosan stabilized silver nanoparticles for visual and colorimetric detection of glucose. *Analyst*, *137*(23), 5560-5564.

Jiang, H., Moon, K. S., & Wong, C. P. (2005, March). Synthesis of Ag-Cu alloy nanoparticles for lead-free interconnect materials. In *Advanced Packaging Materials: Processes, Properties and Interfaces, 2005. Proceedings. International Symposium on* (pp. 173-177). IEEE.

Jiangmei, Y. A. N., Huiwang, T. A. O., Muling, Z. E. N. G., Jun, T. A. O., ZHANG, S., Zhiying, Y. A. N., Wang, W., & Jiaqiang, W. A. N. G. (2009). PVP-capped silver nanoparticles as catalyst for oxidative coupling of thiols to disulfides. *Chinese Journal of Catalysis*, *30*(9), 856-858.

Jin, R., Cao, Y., Mirkin, C. A., Kelly, K. L., Schatz, G. C., & Zheng, J. G. (2001). Photoinduced conversion of silver nanospheres to nanoprisms. *Science*, *294*(5548), 1901-1903.

Jing, H., Zhang, Q., Large, N., Yu, C., Blom, D. A., Nordlander, P., & Wang, H. (2014). Tunable plasmonic nanoparticles with catalytically active high-index facets. *Nano letters*, *14*(6), 3674-3682.

Johnson, J. A., Makis, J. J., Marvin, K. A., Rodenbusch, S. E., & Stevenson, K. J. (2013). Size-dependent hydrogenation of p-nitrophenol with Pd nanoparticles synthesized with poly (amido) amine dendrimer templates. *The Journal of Physical Chemistry C*, *117*(44), 22644-22651.

Joshi, S. S., Patil, S. F., Iyer, V., & Mahumuni, S. (1998). Radiation induced synthesis and characterization of copper nanoparticles. Nanostructured materials, 10(7), 1135-1144.

Kaiser, J., Leppert, L., Welz, H., Polzer, F., Wunder, S., Wanderka, N., Albrecht, M., Lunkenbein, T., Breu, J., Kümmel, S., Lu, Y., & Ballauff, M. (2012). Catalytic activity of nanoalloys from gold and palladium. *Physical Chemistry Chemical Physics*, *14*(18), 6487-6495.

Kantam, M. L., Jaya, V. S., Sreedhar, B., Rao, M. M., & Choudary, B. M. (2006). Preparation of alumina supported copper nanoparticles and their application in the synthesis of 1,2,3-triazoles. *Journal of Molecular Catalysis A: Chemical*, *256*(1), 273-277.

Karakhanov, E. A., Maximov, A. L., Kardasheva, Y. S., Skorkin, V. A., Kardashev, S. V., Predeina, V. V., Talanova, M. Y., Luke, E. L., Seeley, J.A., & Cron, S. L. (2010). Copper nanoparticles as active catalysts in hydroxylation of phenol by hydrogen peroxide. *Applied Catalysis A: General*, *385*(1), 62-72.

Kaur, R., Giordano, C., Gradzielski, M., & Mehta, S. K. (2014). Synthesis of Highly Stable, Water- Dispersible Copper Nanoparticles as Catalysts for Nitrobenzene Reduction. *Chemistry–An Asian Journal*, *9*(1), 189-198.

Kelly, K. L., Coronado, E., Zhao, L. L., & Schatz, G. C. (2003). The optical properties of metal nanoparticles: the influence of size, shape, and dielectric environment.

Keunen, R., Cathcart, N., & Kitaev, V. (2014). Plasmon mediated shape and size selective synthesis of icosahedral silver nanoparticles via oxidative etching and their 1-D transformation to pentagonal pins. *Nanoscale*, *6*(14), 8045-8051.

Khalavka, Y., Becker, J., & Sonnichsen, C. (2009). Synthesis of rod-shaped gold nanorattles with improved plasmon sensitivity and catalytic activity. *Journal of the American Chemical Society*, *131*(5), 1871-1875.

Khaleel, A. A. (2004). Nanostructured Pure γ- Fe_2O_3 via Forced Precipitation in an Organic Solvent. *Chemistry-A European Journal*, *10*(4), 925-932.

Kim, D., Resasco, J., Yu, Y., Asiri, A. M., & Yang, P. (2014). Synergistic geometric and electronic effects for electrochemical reduction of carbon dioxide using gold-copper bimetallic nanoparticles. *Nature communications*, *5*, 4948.

Kim, M. J., Na, H. J., Lee, K. C., Yoo, E. A., & Lee, M. (2003). Preparation and characterization of Au–Ag and Au–Cu alloy nanoparticles in chloroform. *Journal of Materials Chemistry*, *13*(7), 1789-1792.

Kreibig, U., & Vollmer, M. (2013). *Optical properties of metal clusters* (Vol. 25). Springer Science & Business Media.

Kumar, M., & Deka, S. (2014). Multiply twinned AgNi alloy nanoparticles as highly active catalyst for multiple reduction and degradation reactions. *ACS applied materials & interfaces*, *6*(18), 16071-16081.

Kumar, S., Gandhi, K. S., & Kumar, R. (2007). Modeling of formation of gold nanoparticles by citrate method. *Industrial & Engineering Chemistry Research*, *46*(10), 3128-3136.

Kundu, S., Lau, S., & Liang, H. (2009). Shape-controlled catalysis by cetyltrimethylammonium bromide terminated gold nanospheres, nanorods, and nanoprisms. *The Journal of Physical Chemistry C*, *113*(13), 5150-5156.

Kuroda, K., Ishida, T., & Haruta, M. (2009). Reduction of 4-nitrophenol to 4-aminophenol over Au nanoparticles deposited on PMMA. *Journal of Molecular Catalysis A: Chemical*, *298*(1), 7-11.

Kutsche, I., Gildehaus, G., Schuller, D., & Schumpe, A. (1984). Oxygen solubilities in aqueous alcohol solutions. *Journal of Chemical and Engineering Data*, *29*(3), 286-287.

Lam, E., & Luong, J. H. (2014). Carbon materials as catalyst supports and catalysts in the transformation of biomass to fuels and chemicals. *ACS catalysis*, *4*(10), 3393-3410.

Lan, Q., Liu, C., Yang, F., Liu, S., Xu, J., & Sun, D. (2007). Synthesis of bilayer oleic acid-coated Fe_3O_4 nanoparticles and their application in pH-responsive Pickering emulsions. *Journal of colloid and interface science*, *310*(1), 260-269.

Larsson, E. M., Alegret, J., Käll, M., & Sutherland, D. S. (2007). Sensing characteristics of NIR localized surface plasmon resonances in gold nanorings for application as ultrasensitive biosensors. *Nano letters*, *7*(5), 1256-1263.

Layek, K., Kantam, M. L., Shirai, M., Nishio-Hamane, D., Sasaki, T., & Maheswaran, H. (2012). Gold nanoparticles stabilized on nanocrystalline magnesium oxide as an active catalyst for reduction of nitroarenes in aqueous medium at room temperature. *Green chemistry*, *14*(11), 3164-3174.

Lee, H. Y., Li, Z., Chen, K., Hsu, A. R., Xu, C., Xie, J., Sun, S., & Chen, X. (2008a). PET/MRI dual-modality tumor imaging using arginine-glycine-aspartic (RGD)–conjugated radiolabeled iron oxide nanoparticles. *Journal of Nuclear Medicine*, *49*(8), 1371-1379.

Lee, J. S., Ulmann, P. A., Han, M. S., & Mirkin, C. A. (2008b). A DNA-gold nanoparticle-based colorimetric competition assay for the detection of cysteine. *Nano letters*, *8*(2), 529-533.

Lee, K. S., & El-Sayed, M. A. (2006). Gold and silver nanoparticles in sensing and imaging: sensitivity of plasmon response to size, shape, and metal composition. *The Journal of Physical Chemistry B*, *110*(39), 19220-19225.

Li, J., Liu, C. Y., & Liu, Y. (2012). Au/graphene hydrogel: synthesis, characterization and its use for catalytic reduction of 4-nitrophenol. *Journal of Materials Chemistry*, *22*(17), 8426-8430.

Li, L., Niu, Z., Cai, S., Zhi, Y., Li, H., Rong, H., Liu, L., Liu, L., He, W., & Li, Y. (2013). A PdAg bimetallic nanocatalyst for selective reductive amination of nitroarenes. *Chemical Communications*, *49*(61), 6843-6845.

Li, X., Jiang, L., Zhan, Q., Qian, J., & He, S. (2009). Localized surface plasmon resonance (LSPR) of polyelectrolyte-functionalized gold-nanoparticles for bio-sensing. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, *332*(2), 172-179.

Lim, J., Bokare, A. D., & Choi, W. (2017). Visible light sensitization of TiO_2 nanoparticles by a dietary pigment, curcumin, for environmental photochemical transformations. *RSC Advances*, *7*(52), 32488-32495.

Lin, C., Tao, K., Hua, D., Ma, Z., & Zhou, S. (2013). Size effect of gold nanoparticles in catalytic reduction of p-nitrophenol with $NaBH_4$. *Molecules*, *18*(10), 12609-12620.

Lin, X., Ji, G., Liu, Y., Huang, Q., Yang, Z., & Du, Y. (2012). Formation mechanism and magnetic properties of hollow Fe_3O_4 nanospheres synthesized without any surfactant. *CrystEngComm*, *14*(24), 8658-8663.

Linic, S., Christopher, P., & Ingram, D. B. (2011). Plasmonic-metal nanostructures for efficient conversion of solar to chemical energy. *Nature materials*, *10*(12), 911.

Linic, S., Christopher, P., Xin, H., & Marimuthu, A. (2013). Catalytic and photocatalytic transformations on metal nanoparticles with targeted geometric and plasmonic properties. *Accounts of chemical research*, *46*(8), 1890-1899.

Link, S., & El-Sayed, M. A. (1999). Spectral properties and relaxation dynamics of surface plasmon electronic oscillations in gold and silver nanodots and nanorods. J. Phys. Chem. B, 103(40), 8410–8426.

Long, R., Zhou, S., Wiley, B. J., & Xiong, Y. (2014). Oxidative etching for controlled synthesis of metal nanocrystals: atomic addition and subtraction. *Chemical Society Reviews*, *43*(17), 6288-6310.

Lu, Y., Mei, Y., Walker, R., Ballauff, M., & Drechsler, M. (2006). 'Nano-tree'-type spherical polymer brush particles as templates for metallic nanoparticles. *Polymer*, *47*(14), 4985-4995.

Lu, Z., Huang, Y., Zhang, L., Xia, K., Deng, Y., & He, N. (2015). Preparation of gold nanorods using 1,2,4-Trihydroxybenzene as a reducing agent. *Journal of nanoscience and nanotechnology*, *15*(8), 6230-6235.

Luo, J., Njoki, P. N., Lin, Y., Mott, D., Wang, L., & Zhong, C. J. (2006). Characterization of carbon-supported AuPt nanoparticles for electrocatalytic methanol oxidation reaction. *Langmuir*, *22*(6), 2892-2898.

Luo, M. F., Wang, C. C., Hu, G. R., Lin, W. R., Ho, C. Y., Lin, Y. C., & Hsu, Y. J. (2009). Active alloying of Au with Pt in nanoclusters supported on a thin film of Al_2O_3/NiAl (100). *The Journal of Physical Chemistry C*, *113*(50), 21054-21062.

Lv, H., Ji, G., Liu, W., Zhang, H., & Du, Y. (2015). Achieving hierarchical hollow carbon@Fe@Fe_3O_4 nanospheres with superior microwave absorption properties and lightweight features. *Journal of Materials Chemistry C*, *3*(39), 10232-10241.

Maddinedi, S. B., Mandal, B. K., Patil, S. H., Andhalkar, V. V., & Shivendu, R. NanditaD (2017) Diastase induced green synthesis of bilayered reduced graphene oxide and its decoration with gold nanoparticles. *JPhotochem Photobiol B Biol*, *166*, 252-258.

Mallin, M. P., & Murphy, C. J. (2002). Solution-phase synthesis of sub-10 nm Au-Ag alloy nanoparticles. *Nano Letters*, *2*(11), 1235-1237.

Marimuthu, A., Zhang, J., & Linic, S. (2013). Tuning selectivity in propylene epoxidation by plasmon mediated photo-switching of Cu oxidation state. *Science*, *339*(6127), 1590-1593.

Martínez-Prieto, L. M., Carenco, S., Wu, C. H., Bonnefille, E., Axnanda, S., Liu, Z., Fazzini, P. F., Phillippot, K., Salmeron, M., & Chaudret, B. (2014). Organometallic ruthenium nanoparticles as model catalysts for CO hydrogenation: A nuclear magnetic resonance and ambient-pressure X-ray photoelectron spectroscopy study. *ACS Catalysis*, *4*(9), 3160-3168.

Maryami, M., Nasrollahzadeh, M., Mehdipour, E., & Sajadi, S. M. (2016). Preparation of the Ag/RGO nanocomposite by use of Abutilon hirtum leaf extract: A recoverable catalyst for the reduction of organic dyes in aqueous medium at room temperature. *International Journal of Hydrogen Energy*, *41*(46), 21236-21245.

Mayer, A. B. R., & Mark, J. E. (1997). Transition metal nanoparticles protected by amphiphilic block copolymers as tailored catalyst systems. *Colloid and Polymer Science*, *275*(4), 333-340.

Maytum, H. C., Francos, J., Whatrup, D. J., & Williams, J. M. (2010). 1,4- Butanediol as a Reducing Agent in Transfer Hydrogenation Reactions. *Chemistry–An Asian Journal*, *5*(3), 538-542.

Mazumder, V., Chi, M., Mankin, M. N., Liu, Y., Metin, O., Sun, D., More, K. L., & Sun, S. (2012). A facile synthesis of MPd (M = Co, Cu) nanoparticles and their catalysis for formic acid oxidation. *Nano letters*, *12*(2), 1102-1106.

Mclaren, A., Valdes-Solis, T., Li, G., & Tsang, S. C. (2009). Shape and size effects of ZnO nanocrystals on photocatalytic activity. *Journal of the American Chemical Society*, *131*(35), 12540-12541.

Mei, Y., Lu, Y., Polzer, F., Ballauff, M., & Drechsler, M. (2007). Catalytic activity of palladium nanoparticles encapsulated in spherical polyelectrolyte brushes and core-shell microgels. *Chemistry of Materials*, *19*(5), 1062-1069.

Meshram, S. M., Bonde, S. R., Gupta, I. R., Gade, A. K., & Rai, M. K. (2013). Green synthesis of silver nanoparticles using white sugar. *IET nanobiotechnology*, *7*(1), 28-32.

Miller, J. T., Kropf, A. J., Zha, Y., Regalbuto, J. R., Delannoy, L., Louis, C., Bus, E., & van Bokhoven, J. A. (2006). The effect of gold particle size on Au-Au bond length and reactivity toward oxygen in supported catalysts. *Journal of Catalysis*, *240*(2), 222-234.

Millstone, J. E., Hurst, S. J., Métraux, G. S., Cutler, J. I., & Mirkin, C. A. (2009). Colloidal gold and silver triangular nanoprisms. *small*, *5*(6), 646-664.

Mock, J. J., Barbic, M., Smith, D. R., Schultz, D. A., & Schultz, S. (2002). Shape effects in plasmon resonance of individual colloidal silver nanoparticles. *The Journal of Chemical Physics*, *116*(15), 6755-6759.

Mohan, B., Yoon, C., Jang, S., & Park, K. H. (2015). Copper Nanoparticles Catalyzed Se(Te)-Se(Te) Bond Activation: A Straightforward Route Towards Unsymmetrical Organochalcogenides from Boronic Acids. *ChemCatChem*, *7*(3), 405-412.

Moon, H. R., Kim, J. H., & Suh, M. P. (2005). Redox- Active Porous Metal–Organic Framework Producing Silver Nanoparticles from AgI Ions at Room Temperature. *AngewandteChemie*, *117*(8), 1287-1291.

Moskovits, M., Srnová-Šloufová, I., & Vlčková, B. (2002). Bimetallic Ag-Au nanoparticles: extracting meaningful optical constants from the surface-plasmon extinction spectrum. *The Journal of chemical physics*, *116*(23), 10435-10446.

Moteki, T., Murakami, Y., Noda, S., Maruyama, S., & Okubo, T. (2011). Zeolite surface as a catalyst support material for synthesis of single-walled carbon nanotubes. *The Journal of Physical Chemistry C*, *115*(49), 24231-24237.

Moussawi, R. N., & Patra, D. (2016). Nanoparticle Self-Assembled Grain Like Curcumin Conjugated ZnO: Curcumin Conjugation Enhances Removal of Perylene, Fluoranthene, and Chrysene by ZnO. *Scientific reports*, *6*, 24565

Murphy, C. J. (2002). Nanocubes and nanoboxes. *Science*, *298*(5601), 2139-2141.

Murphy, C. J., Sau, T. K., Gole, A. M., Orendorff, C. J., Gao, J., Gou, L., Hunyadi, S. E., & Li, T. (2005). Anisotropic metal nanoparticles: synthesis, assembly, and optical applications. *J Phys Chem B*, *109*(29), 13857–13870.

Murthy, P. K., Mohan, Y. M., Varaprasad, K., Sreedhar, B., & Raju, K. M. (2008). First successful design of semi-IPN hydrogel–silver nanocomposites: a facile approach for antibacterial application. *Journal of Colloid and Interface Science*, *318*(2), 217-224.

Narayanan, R., & El-Sayed, M. A. (2004). Shape-dependent catalytic activity of platinum nanoparticles in colloidal solution. *Nano letters*, *4*(7), 1343-1348.

Nasrollahzadeh, M., Jaleh, B., Fakhri, P., Zahraei, A., & Ghadery, E. (2015). Synthesis and catalytic activity of carbon supported copper nanoparticles for the synthesis of aryl nitriles and 1, 2, 3-triazoles. *RSC Advances*, *5*(4), 2785-2793.

Nasrollahzadeh, M., Sajadi, S. M., & Khalaj, M. (2014). Green synthesis of copper nanoparticles using aqueous extract of the leaves of Euphorbia esula L and their catalytic activity for ligand-free Ullmann-coupling reaction and reduction of 4-nitrophenol. *RSC Advances*, *4*(88), 47313-47318.

Nath, S., Jana, S., Pradhan, M., & Pal, T. (2010). Ligand-stabilized metal nanoparticles in organic solvent. *Journal of colloid and interface science*, *341*(2), 333-352.

Navas, M. P., & Soni, R. K. (2015). Laser-generated bimetallic Ag-Au and Ag-Cu core-shell nanoparticles for refractive index sensing. *Plasmonics*, *10*(3), 681-690.

Nehl, C. L., Liao, H., & Hafner, J. H. (2006). Optical properties of star-shaped gold nanoparticles. *Nano letters*, *6*(4), 683-688.

Nemanashi, M., & Meijboom, R. (2013). Synthesis and characterization of Cu, Ag and Au dendrimer-encapsulated nanoparticles and their application in the reduction of 4-nitrophenol to 4-aminophenol. *Journal of colloid and interface science*, *389*(1), 260-267.

Noh, J. H., & Meijboom, R. (2014). Catalytic evaluation of dendrimer-templated Pd nanoparticles in the reduction of 4-nitrophenol using Langmuir–Hinshelwood kinetics. *Applied Surface Science*, *320*, 400-413.

Oturan, M. A., Peiroten, J., Chartrin, P., & Acher, A. J. (2000). Complete destruction of p-nitrophenol in aqueous medium by electro-Fenton method. *Environmental Science & Technology*, *34*(16), 3474-3479.

Ozin, G. A., Arsenault, A. C., & Cademartiri, L. (2009). *Nanochemistry: a chemical approach to nanomaterials*. Royal Society of Chemistry.

Pachón, L. D., & Rothenberg, G. (2008). Transition- metal nanoparticles: synthesis, stability and the leaching issue. *Applied Organometallic Chemistry*, *22*(6), 288-299.

Panáček, A., Kvítek, L., Prucek, R., Kolář, M., Večeřová, R., Pizúrová, N., Sharma,V.K., Nevěčná, T., & Zbořil, R. (2006). Silver colloid nanoparticles: synthesis, characterization, and their antibacterial activity. *J. Phys. Chem. B*, *110*(33), 16248-16253.

Pandey, S., & Mishra, S. B. (2014). Catalytic reduction of p-nitrophenol by using platinum nanoparticles stabilised by guar gum. *Carbohydrate polymers*, *113*, 525-531.

Panigrahi, S., Kundu, S., Ghosh, S., Nath, S., & Pal, T. (2004). General method of synthesis for metal nanoparticles. *Journal of Nanoparticle Research*, *6*(4), 411-414.

Park, B. K., Jeong, S., Kim, D., Moon, J., Lim, S., & Kim, J. S. (2007). Synthesis and size control of monodisperse copper nanoparticles by polyol method. *Journal of colloid and interface science*, *311*(2), 417-424.

Park, S. J., Kim, S., Lee, S., Khim, Z. G., Char, K., & Hyeon, T. (2000). Synthesis and magnetic studies of uniform iron nanorods and nanospheres. *Journal of the American Chemical Society*, *122*(35), 8581-8582.

Patil, D., Nag, S., Nag, A., & Basak, A. (2008). Comparison of catalytic activities between esterase and lipase in the synthesis of drugs and flavor and amide compounds. *Pharmaceutical Chemistry Journal*, *42*(5), 281-283.

Pietrowski, M. (2011). Selective hydrogenation of ortho-chloronitrobenzene over Ru and Ir catalysts under the conditions of the aqueous-phase reforming of bioethanol. *Green Chemistry*, *13*(7), 1633-1635.

Pissuwan, D., Valenzuela, S. M., & Cortie, M. B. (2006). Therapeutic possibilities of plasmonically heated gold nanoparticles. *TRENDS in Biotechnology*, *24*(2), 62-67.

Potara, M., Gabudean, A. M., & Astilean, S. (2011). Solution-phase, dual LSPR-SERS plasmonic sensors of high sensitivity and stability based on chitosan-coated anisotropic silver nanoparticles. *Journal of Materials Chemistry*, *21*(11), 3625-3633.

Pradhan, N., Pal, A., & Pal, T. (2001). Catalytic reduction of aromatic nitro compounds by coinage metal nanoparticles. *Langmuir*, *17*(5), 1800-1802.

Pradhan, N., Pal, A., & Pal, T. (2002). Silver nanoparticle catalyzed reduction of aromatic nitro compounds. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, *196*(2), 247-257.

Priecel, P., Salami, H. A., Padilla, R. H., Zhong, Z., & Lopez-Sanchez, J. A. (2016). Anisotropic gold nanoparticles: Preparation and applications in catalysis. *Chinese Journal of Catalysis*, *37*(10), 1619-1650.

Primo, A., Corma, A., & García, H. (2011). Titania supported gold nanoparticles as photocatalyst. *Physical Chemistry Chemical Physics*, *13*(3), 886-910.

Priyadarsini, K. I. (2014). The chemistry of curcumin: from extraction to therapeutic agent. *Molecules*, *19*(12), 20091-20112.

Prucek, R., Kvítek, L., Panáček, A., Vančurová, L., Soukupová, J., Jančík, D., & Zbořil, R. (2009). Polyacrylate-assisted synthesis of stable copper nanoparticles and copper (I) oxide nanocubes with high catalytic efficiency. *Journal of Materials Chemistry*, *19*(44), 8463-8469.

Puntes, V. F., Krishnan, K. M., & Alivisatos, A. P. (2001). Colloidal nanocrystal shape and size control: the case of cobalt. *Science*, *291*(5511), 2115-2117.

Quek, X. Y., Pestman, R., van Santen, R. A., & Hensen, E. J. (2013). Effect of Organic Capping Agents on Ruthenium‐ Nanoparticle‐ Catalyzed Aqueous‐ Phase Fischer–Tropsch Synthesis. *ChemCatChem*, *5*(10), 3148-3155.

Rashid, M. H., Bhattacharjee, R. R., Kotal, A., & Mandal, T. K. (2006). Synthesis of spongy gold nanocrystals with pronounced catalytic activities. *Langmuir*, *22*(17), 7141-7143.

Reguera, J., Langer, J., de Aberasturi, D. J., & Liz-Marzán, L. M. (2017). Anisotropic metal nanoparticles for surface enhanced Raman scattering. *Chemical Society Reviews*.

Robinson, I., Zacchini, S., Tung, L. D., Maenosono, S., & Thanh, N. T. (2009). Synthesis and characterization of magnetic nanoalloys from bimetallic carbonyl clusters. *Chemistry of Materials*, *21*(13), 3021-3026.

Roh, Y., Vali, H., Phelps, T. J., & Moon, J. W. (2006). Extracellular synthesis of magnetite and metal-substituted magnetite nanoparticles. *Journal of nanoscience and nanotechnology*, *6*(11), 3517-3520.

Rose, H. H. (2008). Optics of high-performance electron microscopes. *Science and Technology of Advanced Materials*, *9*(1), 014107.

Russo, L., Colangelo, F., Cioffi, R., Rea, I., & Stefano, L. D. (2011). A mechanochemical approach to porous silicon nanoparticles fabrication. *Materials*, *4*(6), 1023-1033

Rutledge, R. D., Morris, W. H., Wellons, M. S., Gai, Z., Shen, J., Bentley, J., Wittig, J. E., & Lukehart, C. M. (2006). Formation of FePt nanoparticles having high coercivity. *Journal of the American Chemical Society*, *128*(44), 14210-14211.

Saha, S., Pal, A., Kundu, S., Basu, S., & Pal, T. (2009). Photochemical green synthesis of calcium-alginate-stabilized Ag and Au nanoparticles and their catalytic application to 4-nitrophenol reduction. *Langmuir*, *26*(4), 2885-2893.

Sanedrin, R. G., Georganopoulou, D. G., Park, S., & Mirkin, C. A. (2005). Seed‐ Mediated Growth of Bimetallic Prisms. *Advanced Materials*, *17*(8), 1027-1031.

Santhanalakshmi, J., & Parimala, L. (2012). The copper nanoparticles catalysed reduction of substituted nitrobenzenes: effect of nanoparticle stabilizers. *Journal of Nanoparticle Research*, *14*(9), 1090.

Sarina, S., Zhu, H., Jaatinen, E., Xiao, Q., Liu, H., Jia, J., Chen, C., & Zhao, J. (2013). Enhancing catalytic performance of palladium in gold and palladium alloy nanoparticles for organic synthesis reactions through visible light irradiation at ambient temperatures. *Journal of the American Chemical Society*, *135*(15), 5793-5801.

Schmidt, T. J., Noeske, M., Gasteiger, H. A., Behm, R. J., Britz, P., Brijoux, W., & Bönnemann, H. (1997). Electrocatalytic activity of PtRu alloy colloids for CO and CO/H_2 electrooxidation: stripping voltammetry and rotating disk measurements. *Langmuir*, *13*(10), 2591-2595.

Schubert, M. M., Plzak, V., Garche, J., & Behm, R. J. (2001). Activity, selectivity, and long-term stability of different metal oxide supported gold catalysts for the preferential CO oxidation in H_2 rich gas. *Catalysis Letters*, *76*(3-4), 143-150.

Schwartz, V., Mullins, D. R., Yan, W., Chen, B., Dai, S., & Overbury, S. H. (2004). XAS study of Au supported on TiO_2: Influence of oxidation state and particle size on catalytic activity. *The Journal of Physical Chemistry B*, *108*(40), 15782-15790.

Sergeev, G. B. (2001). Nanochemistry of metals. *Russian chemical reviews*, *70*(10), 809-825.

Severance, M., & Dutta, P. K. (2014). Evolution of silver nanoparticles within an aqueous dispersion of nanosized Zeolite Y: mechanism and applications. *The Journal of Physical Chemistry C*, *118*(49), 28580-28591.

Shah, A., Rahman, L. U., Quraishi, R., & Rehman, Z. U., (2012). Synthesis characterization and application of bimetallic (Au-Ag, Au-Pt. Au-Ru) alloy nanoparticles. Rev. Adv. Mater. Sci. 30, 133-149.

Shah, M., Fawcett, D., Sharma, S., Tripathy, S. K., & Poinern, G. E. J. (2015). Green synthesis of metallic nanoparticles via biological entities. *Materials*, *8*(11), 7278-7308.

Shin, K. S., Choi, J. Y., Park, C. S., Jang, H. J., & Kim, K. (2009). Facile synthesis and catalytic application of silver-deposited magnetic nanoparticles. *Catalysis letters*, *133*(1-2), 1.

Signori, A. M., Santos, K. D. O., Eising, R., Albuquerque, B. L., Giacomelli, F. C., & Domingos, J. B. (2010). Formation of catalytic silver nanoparticles supported on branched polyethyleneimine derivatives. *Langmuir*, *26*(22), 17772-17779.

Silvert, P. Y., Vijayakrishnan, V., Vibert, P., Herrera-Urbina, R., & Elhsissen, K. T. (1996). Synthesis and characterization of nanoscale Ag-Pd alloy particles. *Nanostructured materials*, *7*(6), 611-618.

Sindhu, K., Rajaram, A., Sreeram, K. J., & Rajaram, R. (2014). Curcumin conjugated gold nanoparticle synthesis and its biocompatibility. *RSC Advances*, *4*(4), 1808-1818.

Singh, M. K., Singh, M., Verma, J. L., Kumar, N., & Mandal, R. K. (2015). Stabilization of Nanocrystalline Silver by Sella and Mansoori Rice Starch. *Transactions of the Indian Institute of Metals*, *68*(2), 239-245.

Singh, M., Sinha, I., & Mandal, R. K. (2009). Role of pH in the green synthesis of silver nanoparticles. *Materials Letters*, *63*(3), 425-427.

Singh, M., Sinha, I., Premkumar, M., Singh, A. K., & Mandal, R. K. (2010). Structural and surface plasmon behavior of Cu nanoparticles using different stabilizers. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, *359*(1), 88-94.

Smetana, A. B., Klabunde, K. J., Sorensen, C. M., Ponce, A. A., & Mwale, B. (2006). Low-temperature metallic alloying of copper and silver nanoparticles with gold nanoparticles through digestive ripening. *The Journal of Physical Chemistry B*, *110*(5), 2155-2158.

Somorjai, G. A. (1981). *Chemistry in two dimensions: surfaces*. Cornell University Press.

Somorjai, G. A., & Li, Y. (2010). *Introduction to surface chemistry and catalysis*. John Wiley & Sons.

Song, J. Y., & Kim, B. S. (2009). Rapid biological synthesis of silver nanoparticles using plant leaf extracts. *Bioprocess and biosystems engineering*, *32*(1), 79.

Sreelakshmi, C., Goel, N., Datta, K. K. R., Addlagatta, A., Ummanni, R., & Reddy, B. V. (2013). Green synthesis of curcumin capped gold nanoparticles and evaluation of their cytotoxicity. *Nanoscience and Nanotechnology Letters*, *5*(12), 1258-1265.

Sudhakar, M., Naresh, G., Rambabu, G., Anjaneyulu, C., Padmasri, A. H., Kantam, M. L., & Venugopal, A. (2016). Crude bio-glycerol as a hydrogen source for the selective hydrogenation of aromatic nitro compounds over Ru/MgLaO catalyst. *Catalysis Communications*, *74*, 91-94.

Sun, S. P., & Lemley, A. T. (2011). p-Nitrophenol degradation by a heterogeneous Fenton-like reaction on nano-magnetite: process optimization, kinetics, and degradation pathways. *Journal of Molecular Catalysis A: Chemical*, *349*(1), 71-79.

Sun, S., Wang, W., Zhang, L., Shang, M., & Wang, L. (2009). Ag@C core/shell nanocomposite as a highly efficient plasmonic photocatalyst. *Catalysis Communications*, *11*(4), 290-293

Sun, Y. (2010). Silver nanowires–unique templates for functional nanostructures. *Nanoscale*, *2*(9), 1626-1642.

Sun, Y., & Xia, Y. (2002a). Shape-controlled synthesis of gold and silver nanoparticles. *Science*, *298*(5601), 2176-2179.

Sun, Y., & Xia, Y. (2002b). Large‐ Scale Synthesis of Uniform Silver Nanowires Through a Soft, Self‐ Seeding, Polyol Process. *Advanced Materials*, *14*(11), 833-837.

Sun, Y., Xu, L., Yin, Z., & Song, X. (2013). Synthesis of copper submicro/nanoplates with high stability and their recyclable superior catalytic activity towards 4-nitrophenol reduction. *Journal of Materials Chemistry A*, *1*(39), 12361-12370.

Suo, Z., Ma, C., Liao, W., Jin, M., & Lv, H. (2011). Structure and activity of Au–Pd/SiO_2 bimetallic catalyst for thiophene hydride sulfurization. *Fuel processing technology*, *92*(8), 1549-1553.

Szpak, A., Kania, G., Skórka, T., Tokarz, W., Zapotoczny, S., & Nowakowska, M. (2013). Stable aqueous dispersion of superparamagnetic iron oxide nanoparticles protected by charged chitosan derivatives. *Journal of Nanoparticle Research*, *15*(1), 1372.

Tada, H., Ishida, T., Takao, A., Ito, S., Mukhopadhyay, S., Akita, T., Tanaka, K., & Kobayashi, H. (2005). Kinetic and DFT Studies on the Ag/TiO_2‐ Photocatalyzed Selective Reduction of Nitrobenzene to Aniline. *ChemPhysChem*, *6*(8), 1537-1543.

Tada, H., Suzuki, F., Ito, S., Akita, T., Tanaka, K., Kawahara, T., & Kobayashi, H. (2002). Au-core/Pt-shell bimetallic cluster-loaded TiO_2. 1. Adsorption of organosulfur compound. *The Journal of Physical Chemistry B*, *106*(34), 8714-8720.

Tamaura, Y., Ito, K., & Katsura, T. (1983). Transformation of γ-FeO(OH) to Fe_3O_4 by adsorption of iron(II) ion on γ-FeO(OH). *Journal of the Chemical Society, Dalton Transactions*, (2), 189-194.

Tan, H., Ma, C., Gao, L., Li, Q., Song, Y., Xu, F., Wang, T., & Wang, L. (2014). Metal–organic framework‐ derived copper nanoparticle@carbon nanocomposites as peroxidase mimics for colorimetric sensing of ascorbic acid. *Chemistry-a European Journal*, *20*(49), 16377-16383.

Tan, M., Wang, G., Ye, Z., & Yuan, J. (2006). Synthesis and characterization of titania-based monodisperse fluorescent europium nanoparticles for biolabeling. *Journal of luminescence*, *117*(1), 20-28.

Tang, M., Wu, T., Xu, X., Zhang, L., & Wu, F. (2014). Factors that affect the stability, type and morphology of Pickering emulsion stabilized by silver nanoparticles/graphene oxide nanocomposites. *Materials Research Bulletin*, *60*, 118-129

Tang, X., & Tsuji, M. (2010). Syntheses of silver nanowires in liquid phase. In *Nanowires Science and Technology*. InTech.

Tao, F., Dag, S., Wang, L. W., Liu, Z., Butcher, D. R., Bluhm, H., Salmeron, M., & Somorjai, G. A. (2010). Break-up of stepped platinum catalyst surfaces by high CO coverage. *Science*, *327*(5967), 850-853.

Tavor, D., Popov, S., Dlugy, C., & Wolfson, A. (2010). Catalytic transfer-hydrogenations of olefins in glycerol. *Organic Communications*, *3*(4), 70.

Toneguzzo, P., Acher, O., Viau, G., Pierrard, A., Fievet-Vincent, F., Fievet, F., & Rosenman, I. (1999). Static and dynamic magnetic properties of fine CoNi and FeCoNi particles synthesized by the polyol process. *IEEE transactions on magnetics*, *35*(5), 3469-3471.

Toshima, N., & Hirakawa, K. (1997). Polymer-protected PtRu bimetallic cluster catalysts for visible-light-induced hydrogen generation from water and electron transfer dynamics. *Applied surface science*, *121*, 534-537.

Toshima, N., & Yonezawa, T. (1998). Bimetallic nanoparticles-novel materials for chemical and physical applications. *New Journal of Chemistry*, *22*(11), 1179-1201.

Toshima, N., Harada, M., Yamazaki, Y., & Asakura, K. (1992). Catalytic activity and structural analysis of polymer-protected gold-palladium bimetallic clusters prepared by the simultaneous reduction of hydrogen tetrachloroaurate and palladium dichloride. *The Journal of Physical Chemistry*, *96*(24), 9927-9933.

Toshima, N., Harada, M., Yonezawa, T., Kushihashi, K., & Asakura, K. (1991). Structural analysis of polymer-protected palladium/platinum bimetallic clusters as dispersed catalysts by using extended x-ray absorption fine structure spectroscopy. *The Journal of Physical Chemistry*, *95*(19), 7448-7453.

Tran, T. T., & Lu, X. (2011). Synergistic effect of Ag and Pd ions on shape-selective growth of polyhedral Au nanocrystals with high-index facets. *The Journal of Physical Chemistry C*, *115*(9), 3638-3645.

Tronc, E., Belleville, P., Jolivet, J. P., & Livage, J. (1992). Transformation of ferric hydroxide into spinel by iron (II) adsorption. *Langmuir*, *8*(1), 313-319.

Tsuji, M., Hikino, S., Tanabe, R., & Yamaguchi, D. (2010). Synthesis of Ag@Cu Core–Shell Nanoparticles in High Yield Using a Polyol Method. *Chemistry letters*, *39*(4), 334-336.

Tsuji, M., Matsuo, R., Jiang, P., Miyamae, N., Ueyama, D., Nishio, M., Hikino. S., Kumagae, H., Kamaruddin, K. S. N., & Tang, X. L., (2008). Shape-dependent evolution of Au@Ag core-shell nanocrystals by PVP-assisted N, N-dimethylformamide reduction. *Crystal Growth and Design*, *8*(7), 2528-2536.

Turkevich, J., Stevenson, P. C., & Hillier, J., (1951). A study of the nucleation and growth processes in the synthesis of colloidal gold. *Discussions of the Faraday Society*, *11*, 55-75.

Valden, M., Lai, X., & Goodman, D. W., (1998). Onset of catalytic activity of gold clusters on titania with the appearance of nonmetallic properties. *science*, *281*(5383), 1647-1650.

vanBokhoven, J. A., & Miller, J. T. (2007). d Electron density and reactivity of the d band as a function of particle size in supported gold catalysts. *The Journal of Physical Chemistry C*, *111*(26), 9245-9249.

vanBokhoven, J. A., Louis, C., Miller, J. T., Tromp, M., Safonova, O. V., & Glatzel, P. (2006). Activation of Oxygen on Gold/Alumina Catalysts: In Situ High-Energy-Resolution Fluorescence and Time-Resolved X-ray Spectroscopy. *AngewandteChemie*, *118*(28), 4767-4770.

Vasileva, P., Donkova, B., Karadjova, I., & Dushkin, C. (2011). Synthesis of starch-stabilized silver nanoparticles and their application as a surface plasmon resonance-based sensor of hydrogen peroxide. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, *382*(1), 203-210.

Vats, T., Gogoi, R., Gaur, P., Sharma, A., Ghosh, S., & Siril, P. F. (2017). Pristine Graphene–Copper (II) Oxide Nanocatalyst: A Novel and Green Approach in CuAAC Reactions. *ACS Sustainable Chemistry & Engineering*.

Venkatesham, M., Ayodhya, D., Madhusudhan, A., Babu, N. V., & Veerabhadram, G. (2014). A novel green one-step synthesis of silver nanoparticles using chitosan: catalytic activity and antimicrobial studies. *Applied Nanoscience*, *4*(1), 113-119.

Verho, O., Gao, F., Johnston, E. V., Wan, W., Nagendiran, A., Zheng, H., Backvall, J. E., & Zou, X. (2014). Mesoporous silica nanoparticles applied as a support for Pd and Au nanocatalysts in cycloisomerization reactions. *APL materials*, *2*(11), 113316.

Verma, A. D., Mandal, R. K., & Sinha, I. (2015). Kinetics of p-nitrophenol reduction catalyzed by PVP stabilized copper nanoparticles. *Catalysis Letters*, *145*(10), 1885-1892.

Viau, G., Fievet-Vincent, F., & Fievet, F. (1996). Nucleation and growth of bimetallic CoNi and FeNi monodisperse particles prepared in polyols. *Solid State Ionics*, *84*(3-4), 259-270.

VilØ, G., Almora-Barrios, N., Mitchell, S., López, N., & PØrez-Ramírez, J. (2014). From the Lindlar Catalyst to Supported Ligand-Modified Palladium Nanoparticles: Selectivity Patterns and Accessibility Constraints in the Continuous-Flow Three-Phase Hydrogenation of Acetylenic Compounds. *Chem. Eur. J*, *20*, 5926-5937.

Vogel, A. I., (1978) A textbook of Practical organic chemistry, ELBS edition of Fourth edition, Qualitative organic analysis, Longman Group Lim. London, 931-1152

Walsh, M. J., Yoshida, K., Kuwabara, A., Pay, M. L., Gai, P. L., & Boyes, E. D. (2012). On the structural origin of the catalytic properties of inherently strained ultrasmall decahedral gold nanoparticles. *Nano letters*, *12*(4), 2027-2031.

Wang, D., Villa, A., Porta, F., Prati, L., & Su, D. (2008). Bimetallic gold/palladium catalysts: Correlation between nanostructure and synergistic effects. *The Journal of Physical Chemistry C*, *112*(23), 8617-8622.

Wang, F., Li, C., Chen, H., Jiang, R., Sun, L. D., Li, Q., Wang, J., Yu, J. C., & Yan, C. H. (2013). Plasmonic harvesting of light energy for Suzuki coupling reactions. *J. Am. Chem. Soc*, *135*(15), 5588-5601.

Wang, H. J., Yang, Z. X., Dai, X. T., Chen, Y. F., Yang, H. P., & Zhou, X. D. (2017). Bisdemethoxycurcumin sensitizes cisplatin-resistant lung cancer cells to chemotherapy by inhibition of CA916798 and PI3K/AKT signaling. *Apoptosis*, 1-12.

Wang, H., Zhang, L., Chen, Z., Hu, J., Li, S., Wang, Z., Liu, J., & Wang, X. (2014). Semiconductor heterojunction photocatalysts: design, construction, and photocatalytic performances. *Chemical Society Reviews*, *43*(15), 5234-5244.

Wang, Z. L. (2000). Transmission electron microscopy of shape-controlled nanocrystals and their assemblies.

Watanabe, M. A., & Motoo, S. (1975). Electrocatalysis by ad-atoms: Part II. Enhancement of the oxidation of methanol on platinum by ruthenium ad-atoms. *Journal of Electroanalytical Chemistry and Interfacial Electrochemistry*, *60*(3), 267-273.

Wei, Y., Zhao, Z., Liu, J., Liu, S., Xu, C., Duan, A., & Jiang, G. (2014). Multifunctional catalysts of three-dimensionally ordered macroporous oxide-supported Au@Pt core–shell nanoparticles with high catalytic activity and stability for soot oxidation. *Journal of Catalysis*, *317*, 62-74.

Westsson, E., & Koper, G. J. (2014). How to determine the core-shell nature in bimetallic catalyst particles?. *Catalysts*, *4*(4), 375-396.

Whitby, R. (2015). Nanomaterials in Catalysis, Philippe Serp and Karine Philippot (editors), Wiley- VCH, 2013, 516 pages, ISBN: 978- 3- 527- 33124- 6. *Applied Organometallic Chemistry*, *29*(1), 59-59.

Whyman, R. (2005). Piet WNM Van Leeuwen. Homogeneous catalysis—understanding the art. Kluwer, Dordrecht, 2004, 407 pp;(UK). ISBN 1- 4020- 1999- 8. *Applied Organometallic Chemistry*, *19*(8), 994-994.

Wolfson, A., & Dlugy, C. (2007b). Palladium-catalyzed Heck and Suzuki coupling in glycerol. *Chemical Papers*, *61*(3), 228-232.

Wolfson, A., Atyya, A., Dlugy, C., & Tavor, D. (2010). Glycerol triacetate as solvent and acyl donor in the production of isoamyl acetate with Candida antarctica lipase B. *Bioprocess and biosystems engineering*, *33*(3), 363-366.

Wolfson, A., Dlugy, C., & Shotland, Y. (2007a). Glycerol as a green solvent for high product yields and selectivities. *Environmental chemistry letters*, *5*(2), 67-71.

Wolfson, A., Dlugy, C., Shotland, Y., & Tavor, D. (2009). Glycerol as solvent and hydrogen donor in transfer hydrogenation–dehydrogenation reactions. *Tetrahedron letters*, *50*(43), 5951-5953.

Wood, B. J., & Wise, H. (1966). The role of adsorbed hydrogen in the catalytic hydrogenation of cyclohexene. *Journal of Catalysis*, *5*(1), 135-145.

Wu, S. H., & Chen, D. H. (2004). Synthesis of high-concentration Cu nanoparticles in aqueous CTAB solutions. *Journal of colloid and interface science*, *273*(1), 165-169.

Wu, W., Lei, M., Yang, S., Zhou, L., Liu, L., Xiao, X., jiang. C., & Roy, V. A. (2015). A one-pot route to the synthesis of alloyed Cu/Ag bimetallic nanoparticles with different mass ratios for catalytic reduction of 4-nitrophenol. *Journal of Materials Chemistry A*, *3*(7), 3450-3455.

Wu, Y., Cai, S., Wang, D., He, W., & Li, Y. (2012). Syntheses of water-soluble octahedral, truncated octahedral, and cubic Pt–Ni nanocrystals and their structure–activity study in model hydrogenation reactions. *Journal of the American Chemical Society*, *134*(21), 8975-8981.

Wunder, S., Lu, Y., Albrecht, M., & Ballauff, M. (2011). Catalytic activity of faceted gold nanoparticles studied by a model reaction: evidence for substrate-induced surface restructuring. *Acs Catalysis*, *1*(8), 908-916.

Wunder, S., Polzer, F., Lu, Y., Mei, Y., & Ballauff, M. (2010). Kinetic analysis of catalytic reduction of 4-nitrophenol by metallic nanoparticles immobilized in spherical polyelectrolyte brushes. *The Journal of Physical Chemistry C*, *114*(19), 8814-8820.

Xia, Y., Xiong, Y., Lim, B., & Skrabalak, S. E. (2009). Shape- controlled synthesis of metal nanocrystals: Simple chemistry meets complex physics?. *Angewandte Chemie International Edition*, *48*(1), 60-103.

Xian, J., Hua, Q., Jiang, Z., Ma, Y., & Huang, W. (2012). Size-dependent interaction of the poly (N-vinyl-2-pyrrolidone) capping ligand with Pd nanocrystals. *Langmuir*, *28*(17), 6736-6741.

Xiao, Q., Sarina, S., Bo, A., Jia, J., Liu, H., Arnold, D. P., Huang, Y., Wu, H., & Zhu, H. (2014a). Visible light-driven cross-coupling reactions at lower temperatures using a photocatalyst of palladium and gold alloy nanoparticles. *ACS Catalysis*, *4*(6), 1725-1734.

Xiao, Q., Sarina, S., Jaatinen, E., Jia, J., Arnold, D. P., Liu, H., & Zhu, H. (2014b). Efficient photocatalytic Suzuki cross-coupling reactions on Au–Pd alloy nanoparticles under visible light irradiation. *Green Chemistry*, *16*(9), 4272-4285.

Xiao-ai, L., Bei, W., Xiao-hong, X., Lei, P., Bin, W., Xiao-xue, D., Chen-hui, Z & Qi-wei, D. (2017). Curcumin re-sensitizes multidrug resistant (MDR) breast cancer to cisplatin through inducing autophagy by decreasing CCAT1 expression. *RSC Advances*, *7*(53), 33572-33579.

Xie, W., Herrmann, C., Kömpe, K., Haase, M., & Schlücker, S. (2011). Synthesis of bifunctional Au/Pt/Au core/shell nanoraspberries for in situ SERS monitoring of platinum-catalyzed reactions. *Journal of the American Chemical Society*, *133*(48), 19302-19305.

Yamamoto, T. A., Kageyama, S., Seino, S., Nitani, H., Nakagawa, T., Horioka, R., Honda, Y., Ueno, K., & Daimon, H. (2011). Methanol oxidation catalysis and substructure of PtRu/C bimetallic nanoparticles synthesized by a radiolytic process. *Applied Catalysis A: General*, *396*(1), 68-75.

Yang, X., Tian, P. F., Zhang, C., Deng, Y. Q., Xu, J., Gong, J., & Han, Y. F. (2013). Au/carbon as Fenton-like catalysts for the oxidative degradation of bisphenol A. *Applied Catalysis B: Environmental*, *134*, 145-152.

Yang, X., Zhong, H., Zhu, Y., Jiang, H., Shen, J., Huang, J., & Li, C. (2014). Highly efficient reusable catalyst based on silicon nanowire arrays decorated with copper nanoparticles. *Journal of Materials Chemistry A*, *2*(24), 9040-9047.

Yantasee, W., Warner, C. L., Sangvanich, T., Addleman, R. S., Carter, T. G., Wiacek, R. J., Fryxell, G. E., Timchalk, C., & Warner, M. G. (2007). Removal of heavy metals from aqueous systems with thiol functionalized superparamagnetic nanoparticles. *Environmental science & technology*, *41*(14), 5114-5119.

Yin, A. X., Min, X. Q., Zhang, Y. W., & Yan, C. H. (2011). Shape-selective synthesis and facet-dependent enhanced electrocatalytic activity and durability of monodisperse sub-10 nm Pt-Pd tetrahedrons and cubes. *Journal of the American Chemical Society*, *133*(11), 3816-3819.

Yoo, H., Millstone, J. E., Li, S., Jang, J. W., Wei, W., Wu, J., Schatz, G. C., & Mirkin, C. A. (2009). Core-shell triangular bifrustums. *Nano letters*, *9*(8), 3038-3041.

Yoo, S. J., Kim, S. K., Jeon, T. Y., Hwang, S. J., Lee, J. G., Lee, S. C., Lee, K. S., Cho, Y. H., Sung, Y. E., & Lim, T. H. (2011). Enhanced stability and activity of Pt-Y alloy catalysts for electrocatalytic oxygen reduction. *Chemical Communications*, *47*(41), 11414-11416.

Yoshida, K., Gonzalez-Arellano, C., Luque, R., & Gai, P. L. (2010). Efficient hydrogenation of carbonyl compounds using low-loaded supported copper nanoparticles under microwave irradiation. *Applied Catalysis A: General*, *379*(1), 38-44.

Yu, Z., Liao, S., Xu, Y., Yang, B., & Yu, D. (1997). Hydrogenation of nitroaromatics by polymer-anchored bimetallic palladium-ruthenium and palladium-platinum catalysts under mild conditions. *Journal of Molecular Catalysis A: Chemical*, *120*(1-3), 247-255.

Zaharia, I. O. N. U. T., Diaconu, I., Ruse, E., & Nechifor, G. (2012). The transport of 3-aminophenol through bulk liquid membrane in the presence of Aliquat 336. *Digest Journal of Nanomaterials and Biostructures*, *7*, 1303-1314.

Zeng, J., Huang, J., Lu, W., Wang, X., Wang, B., Zhang, S., & Hou, J. (2007). Necklace-like Noble-Metal Hollow Nanoparticle Chains: Synthesis and Tunable Optical Properties. *Advanced Materials*, *19*(16), 2172-2176.

Zeng, J., Yang, J., Lee, J. Y., & Zhou, W. (2006). Preparation of carbon-supported core-shell Au-Pt nanoparticles for methanol oxidation reaction: the promotional effect of the Au core. *The Journal of Physical Chemistry B*, *110*(48), 24606-24611.

Zeng, J., Zhang, Q., Chen, J., & Xia, Y. (2009). A comparison study of the catalytic properties of Au-based nanocages, nanoboxes, and nanoparticles. *Nano letters*, *10*(1), 30-35.

Zhang, H., & Toshima, N. (2013). Synthesis of Au/Pt bimetallic nanoparticles with a Pt-rich shell and their high catalytic activities for aerobic glucose oxidation. *Journal of colloid and interface science*, *394*, 166-176.

Zhang, H., Okumura, M., & Toshima, N. (2011a). Stable dispersions of PVP-protected Au/Pt/Ag trimetallic nanoparticles as highly active colloidal catalysts for aerobic glucose oxidation. *The Journal of Physical Chemistry C*, *115*(30), 14883-14891.

Zhang, H., Okuni, J., & Toshima, N. (2011b). One-pot synthesis of Ag–Au bimetallic nanoparticles with Au shell and their high catalytic activity for aerobic glucose oxidation. *Journal of colloid and interface science*, *354*(1), 131-138.

Zhang, J. Y., Liu, L. M., Su, Y. J., Gao, X., Liu, C. H., Liu, J., Dong, B., & Wang, S. D. (2015a). Synergistic effect in organic field-effect transistor nonvolatile memory utilizing bimetal nanoparticles as nano-floating-gate. *Organic Electronics*, *25*, 324-328.

Zhang, L., Xia, K., Lu, Z., Li, G., Chen, J., Deng, Y., Li, S., Zhou, F., & He, N. (2014). Efficient and facile synthesis of gold nanorods with finely tunable plasmonic peaks from visible to near-IR range. *Chemistry of Materials*, *26*(5), 1794-1798.

Zhang, P., Sui, Y., Xiao, G., Wang, Y., Wang, C., Liu, B., Zou, G., & Zou, B. (2013). Facile fabrication of faceted copper nanocrystals with high catalytic activity for p-nitrophenol reduction. *Journal of Materials Chemistry A*, *1*(5), 1632-1638.

Zhang, Z., Ji, Y., Li, J., Zhong, Z., & Su, F. (2015b). Synergistic effect in bimetallic copper–silver (Cu_xAg) nanoparticles enhances silicon conversion in Rochow reaction. *RSC Advances*, *5*(67), 54364-54371.

Zhao, M., & Crooks, R. M. (1999). Homogeneous hydrogenation catalysis with monodisperse, dendrimer-encapsulated Pd and Pt nanoparticles. *AngewandteChemie-International Edition*, *38*(3), 364-365.

Zhao, M., Sun, L., & Crooks, R. M. (1998). Preparation of Cu nanoclusters within dendrimer templates. *Journal of the American Chemical Society*, *120*(19), 4877-4878.

Zheng, J., Lin, H., Wang, Y. N., Zheng, X., Duan, X., & Yuan, Y. (2013). Efficient low-temperature selective hydrogenation of esters on bimetallic Au-Ag/SBA-15 catalyst. *Journal of catalysis*, *297*, 110-118.

Zheng, N., & Stucky, G. D. (2006). A general synthetic strategy for oxide-supported metal nanoparticle catalysts. *Journal of the American Chemical Society*, *128*(44), 14278-14280.

Zhu, H., Ke, X., Yang, X., Sarina, S., & Liu, H. (2010). Reduction of nitroaromatic compounds on supported gold nanoparticles by visible and ultraviolet light. *Angewandte Chemie*, *122*(50), 9851-9855.

Zhu, M., Wang, C., Meng, D., & Diao, G. (2013). In situ synthesis of silver nanostructures on magnetic Fe_3O_4@C core–shell nanocomposites and their application in catalytic reduction reactions. *Journal of Materials Chemistry A*, *1*(6), 2118-2125.

Zweifel, T., Naubron, J. V., Büttner, T., Ott, T., & Grützmacher, H. (2008). Ethanol as hydrogen donor: Highly efficient transfer hydrogenations with rhodium (I) amides. *Angewandte Chemie International Edition*, *47*(17), 3245-3249.