

REFERENCES

- Abazari, R., Heshmatpour, F., Balalaie, S. Pt/Pd/Fe trimetallic nanoparticle produced via reverse micelle technique: synthesis, characterization, and its use as an efficient catalyst for reductive hydrodehalogenation of aryl and aliphatic halides under mild conditions. *ACS Catal.* 2012, 3: 139-149.
- Alonso, D.A., Najera, C., Pacheco, M.C. Oxime Palladacycles: Stable and Efficient Catalysts for Carbon–Carbon Coupling Reactions. *Org. Lett.* 2000, 2: 1823-1826.
- Anandan, S., Grieser, F., Ashok kumar, M. Sonochemical synthesis of Au–Ag core–shell bimetallic nanoparticles. *J. Phys. Chem. C.* 2008, 112: 15102-15105.
- Ananikov, V.P., Orlov, N.V., Beletskaya, I.P., Khrustalev, V.N., Antipin, M.Y., Timofeeva, T.V. New approach for size-and shape-controlled preparation of Pd nanoparticles with organic ligands. Synthesis and application in catalysis. *J. Am. Chem. Soc.* 2007, 129: 7252-7253.
- Andres, R., de Jesus, E., Flores, J.C. Catalysts based on palladium dendrimers. *New J Chem.* 2007, 31: 1161-1191.
- An, H., Ha, H., Yoo, M., Kim, H.Y. Understanding the atomic-level process of CO-adsorption-driven surface segregation of Pd in (AuPd) 147 bimetallic nanoparticles. *Nanoscale.* 2017, 9: 12077-12086.
- Armaroli, N., Balzani, V. The hydrogen issue. *ChemSusChem.* 2011, 4: 21-36.
- Aslan, K., Leonenko, Z., Lakowicz, J.R., Geddes, C.D. 2005. Annealed silver-island films for applications in metal-enhanced fluorescence: interpretation in terms of radiating plasmons. *J Fluoresc.* 2005, 15: 643-654.
- Astruc, D., Lu, F., Aranzaes, J.R. Nanoparticles as recyclable catalysts: the frontier between homogeneous and heterogeneous catalysis. *Angew. Chem. Int. Ed.* 2005, 44: 7852-7872.
- Astruc, D. Palladium nanoparticles as efficient green homogeneous and heterogeneous carbon–carbon coupling precatalysts: A unifying view. *Inorg Chem.* 2007, 46: 1884-1894.
- Avnir, D., Coradin, T., Lev, O., Livage, J. Recent bio-applications of sol–gel materials. *J. Mater. Chem.* 2006, 16: 1013-1030.
- Baber, R., Mazzei, L., Thanh, N.T.K., Gavrilidis, A. An engineering approach to synthesis of gold and silver nanoparticles by controlling hydrodynamics and mixing based on a coaxial flow reactor. *Nanoscale.* 2017, 9: 14149-14161.

- Badetti, E., Caminade, A.M., Majoral, J.P., Moreno-Manas, M., Sebastian, R.M. Palladium (0) nanoparticles stabilized by phosphorus dendrimers containing coordinating 15-membered triolefinic macrocycles in periphery. *Langmuir*. 2008, 24: 2090-2101.
- Balogh, L., Tomalia, D.A. Poly (amidoamine) dendrimer-templated nanocomposites. I. Synthesis of zerovalent copper nanoclusters. *J. Am. Chem. Soc.* 1998, 120: 7355-7356.
- Bardhan, R., Grady, N.K., Halas, N.J. Nanoscale Control of Near Infrared Fluorescence Enhancement Using Au Nanoshells. *Small*. 2008, 4: 1716-1722.
- Bartholome, C., Beyou, E., Bourgeat-Lami, E., Chaumont, P., Lefebvre, F., Zydowicz, N. Nitroxide-mediated polymerization of styrene initiated from the surface of silica nanoparticles. In situ generation and grafting of alkoxyamine initiators. *Macromolecules*. 2005, 38: 1099-1106.
- Batchelor, H.K., Banning, D., Dettmar, P.W., Hampson, F.C., Jolliffe, I.G., Craig, D.Q. An in vitro mucosal model for prediction of the bioadhesion of alginate solutions to the oesophagus. *Int. J. Pharm.* 2002, 238: 123-132.
- Bergbreiter, D.E., Li, C. Poly (4-tert-butylstyrene) as a soluble polymer support in homogeneous catalysis. *Org. Lett.* 2003, 5: 2445-2447.
- Berhault, G., Bausach, M., Bisson, L., Becerra, L., Thomazeau, C., Uzio, D. Seed-mediated synthesis of Pd nanocrystals: factors influencing a kinetic-or thermodynamic-controlled growth regime. *J. Phys. Chem. C*. 2007, 111: 5915-5925.
- Bezbaruah, A.N., Krajangpan, S., Chisholm, B.J., Khan, E., Bermudez, J.J. Entrapment of iron nanoparticles in calcium alginate beads for groundwater remediation applications. *J. Hazard. Mater.* 2009, 166: 1339-1343.
- Bhattacharjee, S., Bruening, M.L. Selective hydrogenation of monosubstituted alkenes by Pd nanoparticles embedded in polyelectrolyte films. *Langmuir*. 2008, 24: 2916-2920.
- Bianchini, C., Shen, P.K. Palladium-based electrocatalysts for alcohol oxidation in half cells and in direct alcohol fuel cells. *Chem. Rev.* 2009, 109: 4183-4206.
- Boontongkong, Y., Cohen, R.E. Cavitated block copolymer micellar thin films: lateral arrays of open nanoreactors. *Macromolecules*. 2002, 35: 3647-3652.
- Bonet, F., Delmas, V., Grugeon, S., Urbina, R.H., Silvert, P.Y., Tekaia-Elhsissen, K. Synthesis of monodisperse Au, Pt, Pd, Ru and Ir nanoparticles in ethylene glycol. *Nanostruct. Mater.* 1999, 11: 1277-1284.
- Bonnemann, H., Richards, R.M. Nanoscopic metal particles—synthetic methods and potential applications. *Eur. J. Inorg. Chem.* 2001, 2001: 2455-2480.

- Bossi, A., Piletsky, S.A., Piletska, E.V., Righetti, P.G., Turner, A.P. An assay for ascorbic acid based on polyaniline-coated microplates. *Anal. Chem.* 2000, 72: 4296-4300.
- Boyd, D.R., Sharma, N.D., Bowers, N.I., Brannigan, I.N., Grocock, M.R., Malone, J.F., McConville, G., Allen, C.C. Biocatalytic Asymmetric Dihydroxylation of Conjugated Mono and Polyalkenes to Yield Enantiopure Cyclic cisdiols. *Adv Synth Catal.* 2005, 347: 1081-1089.
- Briche, S., Riassetto, D., Gastaldin, C., Lamarle, C., Dellea, O., Jamon, D., Pernot, E., Labeau, M., Ravel, G., Langlet, M. Sol-gel processing and UVA patterning of epoxy-based hybrid organic-inorganic thin films. *J. Mater. Sci.* 2008, 43: 5809-5822.
- Brodsky, C.N., Young, A.P., Ng, K.C., Kuo, C.H., Tsung, C.K. Electrochemically induced surface metal migration in well-defined core-shell nanoparticles and its general influence on electrocatalytic reactions. *ACS Nano.* 2014, 8: 9368-9378.
- Brunel, D., Cauvel, A., Di Renzo, F., Fajula, F., Fubini, B., Onida, B., Garrone, E. Preferential grafting of alkoxy silane coupling agents on the hydrophobic portion of the surface of micelle-templated silica. *New J Chem.* 2000, 24: 807-13.
- Bunker, B.C., Carpick, R.W., Assink, R.A., Thomas, M.L., Hankins, M.G., Voigt, J.A., Sipola, D., de Boer, M.P., Gulley, G.L. The impact of solution agglomeration on the deposition of self-assembled monolayers. *Langmuir.* 2000, 16: 7742-7751.
- Bunker, C.E., Smith, M.J. Nanoparticles for hydrogen generation. *J. Mater. Chem.* 2011, 21: 12173-12180.
- Burda, C., Chen, X., Narayanan, R., El-Sayed, M.A. Chemistry and properties of nanocrystals of different shapes. *Chem. Rev.* 2005, 105: 1025-1102.
- Calo, V., Nacci, A., Monopoli, A., Montingelli, F. Pd nanoparticles as efficient catalysts for Suzuki and Stille coupling reactions of aryl halides in ionic liquids. *J. Org. Chem.* 2005, 70: 6040-6044.
- Cannone, F., Chirico, G., Bizzarri, A.R., Cannistraro, S. Quenching and blinking of fluorescence of a single dye molecule bound to gold nanoparticles. *J. Phys. Chem. B.* 2006, 110: 16491-16498.
- Chahdoura, F., Pradel, C., Gomez, M. Palladium Nanoparticles in Glycerol: A Versatile Catalytic System for CX Bond Formation and Hydrogenation Processes. *Adv Synth Catal.* 2013, 355: 3648-3660.

- Chang, H.N., Seong, G.H., Yoo, I.K., Park, J.K., Seo, J.H. Microencapsulation of recombinant *Saccharomyces cerevisiae* cells with invertase activity in liquid core alginate capsules. *Biotechnol. Bioeng.* 1996, 51: 157-162.
- Cha, S.K., Mun, J.H., Chang, T., Kim, S.Y., Kim, J.Y., Jin, H.M., Lee, J.Y., Shin, J., Kim, K.H., Kim, S.O. Au-Ag core-shell nanoparticle array by block copolymer lithography for synergistic broadband plasmonic properties. *ACS Nano.* 2015, 9: 5536-5543.
- Chechik, V., Zhao, M., Crooks, R.M. Self-assembled inverted micelles prepared from a dendrimer template: phase transfer of encapsulated guests. *J. Chem. Soc. Chem.* 1999, 121: 4910-4911.
- Chen, C.C., Chen, L.C. Synthesis and characterization of Pd-Ni core-shell nanocatalysts for alkaline glucose electrooxidation. *RSC Adv.* 2015, 5: 53333-53339.
- Chen, G., Song, J., Zhang, H., Jiang, Y., Liu, W., Zhang, W., Wang, B. Pd nanoparticles encapsulated in magnetic carbon nanocages: an efficient nanoenzyme for the selective detection and multicolor imaging of cancer cells. *Nanoscale.* 2015, 7: 14393-14400.
- Chen, H., Li, Y., Zhang, F., Zhang, G., Fan, X. Graphene supported Au-Pd bimetallic nanoparticles with core-shell structures and superior peroxidase-like activities. *J. Mater. Chem.* 2011, 21: 17658-17661.
- Chen, L., Yelon, A., Sacher, E. X-ray Photoelectron Spectroscopic Studies of Pd Nanoparticles Deposited onto Highly Oriented Pyrolytic Graphite: Interfacial Interaction, Spectral Asymmetry, and Size Determination. *J. Phys. Chem. C.* 2011, 115: 7896-7905.
- Chen, S., Yuan, R., Chai, Y., Hu, F. Electrochemical sensing of hydrogen peroxide using metal nanoparticles: a review. *Microchim. Acta.* 2013, 180: 15-32.
- Chen, W., Cai, S., Ren, Q.Q., Wen, W., Zhao, Y.D. Recent advances in electrochemical sensing for hydrogen peroxide: a review. *Analyst.* 2012, 137: 49-58.
- Chen, W.F., Muckerman, J.T., Fujita, E. Recent developments in transition metal carbides and nitrides as hydrogen evolution electrocatalysts. *Chem. Commun.* 2013, 49: 8896-8909.
- Chen, X., Li, C., Gratzel, M., Kostecki, R., Mao, S.S. Nanomaterials for renewable energy production and storage. *Chem. Soc. Rev.* 2012, 41: 7909-7937.
- Chen, X., Shen, S., Guo, L., Mao, S.S. Semiconductor-based photocatalytic hydrogen generation. *Chem. Rev.* 2010, 110: 6503-6570.

- Cheong, S., Watt, J.D., Tilley, R.D. Shape control of platinum and palladium nanoparticles for catalysis. *Nanoscale*. 2010, 2: 2045-2053.
- Cheon, Y.E., Suh, M.P. Enhanced Hydrogen Storage by Palladium Nanoparticles Fabricated in a Redox active Metal–Organic Framework. *Angew. Chem. Int. Ed.* 2009, 48: 2899-2903.
- Choi, B.S., Lee, Y.W., Kang SW, Hong JW, Kim J, Park I, Han SW. Multimetallic alloy nanotubes with nanoporous framework. *ACS Nano*. 2012, 6: 5659-5667.
- Choi, J.K., Hwang, I.S., Kim, S.J., Park, J.S., Park, S.S., Jeong, U., Kang, Y.C., Lee, J.H. Design of selective gas sensors using electrospun Pd-doped SnO₂ hollow nanofibers. *Sens. Actuator B-Chem.* 2010, 150: 191-199.
- Choi, Y., Bae, H.S., Seo, E., Jang, S., Park, K.H., Kim, B.S. Hybrid gold nanoparticle-reduced graphene oxide nanosheets as active catalysts for highly efficient reduction of nitroarenes. *J. Mater. Chem.* 2011, 21: 15431-15436.
- Chung, C., Kim, Y.K., Shin, D., Ryoo, S.R., Hong, B.H., Min, D.H. Biomedical applications of graphene and graphene oxide. *Acc. Chem. Res.* 2013, 46: 2211-2224.
- Ciriminna, R., Fidalgo, A., Pandarus, V., Beland, F., Ilharco, L.M., Pagliaro, M. The sol–gel route to advanced silica-based materials and recent applications. *Chem. Rev.* 2013, 113: 6592-6620.
- Comas-Rojas, H., Aluicio-Sarduy, E., Rodriguez-Calvo, S., Perez-Gramatges, A., Roser, S.J., Edler, K.J. Interactions and film formation in polyethylenimine–cetyltrimethylammonium bromide aqueous mixtures at low surfactant concentration. *Soft Matter*. 2007, 3: 747-753.
- Cong, C., Nakayama, S., Maenosono, S., Harada, M. Microwave-Assisted Polyol Synthesis of Pt/Pd and Pt/Rh Bimetallic Nanoparticles in Polymer Solutions Prepared by Batch and Continuous-Flow Processing. *Ind. Eng. Chem. Res.* 2017, 57: 179-190.
- Costa, N.J., Guerrero, M., Collieere, V., Teixeira-Neto, E., Landers, R., Philippot, K., Rossi, L.M. Organometallic preparation of Ni, Pd, and NiPd nanoparticles for the design of supported nanocatalysts. *ACS Catal.* 2014, 4: 1735-1742.
- Crooks, R.M., Zhao, M., Sun, L., Chechik, V., Yeung, L.K. Dendrimer-encapsulated metal nanoparticles: synthesis, characterization, and applications to catalysis. *Acc. Chem. Res.* 2001, 34: 181-190.
- Cui, Y., Zhou, D., Sui, Z., Han, B. Sonochemical Synthesis of Graphene Oxide Wrapped Gold Nanoparticles Hybrid Materials: Visible Light Photocatalytic Activity. *Chinese J Chem.* 2015, 33: 119-124.

- Dai, J., Bruening, M.L. Catalytic nanoparticles formed by reduction of metal ions in multilayered polyelectrolyte films. *Nano Lett.* 2002, 2: 497-501.
- Darabdhara, G., Boruah, P.K., Borthakur, P., Hussain, N., Das, M.R., Ahamad, T., Alshehri, S.M., Malgras, V., Wu, K.C.W., Yamauchi, Y. Reduced graphene oxide nanosheets decorated with Au-Pd bimetallic alloy nanoparticles towards efficient photocatalytic degradation of phenolic compounds in water. *Nanoscale*. 2016, 8: 8276-8287.
- Darensbourg, D.J., Rodgers, J.L., Fang, C.C. The copolymerization of carbon dioxide and [2-(3, 4-epoxycyclohexyl) ethyl] trimethoxysilane catalyzed by (salen) CrCl. Formation of a CO₂ soluble polycarbonate. *Inorg Chem.* 2003, 42: 4498-4500.
- Dasari, R., Zamborini, F.P. Hydrogen switches and sensors fabricated by combining electropolymerization and Pd electrodeposition at microgap electrodes. *J. Am. Chem. Soc.* 2008, 130: 16138-16139.
- Dash, S., Mishra, S., Patel, S., Mishra, B.K. Organically modified silica: synthesis and applications due to its surface interaction with organic molecules. *Adv. Colloid Interface Sci.* 2008, 140: 77-94.
- Davidovich-Pinhas, M., Bianco-Peled, H. A quantitative analysis of alginate swelling. *Carbohydr. Polym.* 2010, 79: 1020-1027.
- Deng, H.H., Weng, S.H., Huang, S.L., Zhang, L.N., Liu, A.L., Lin, X.H., Chen, W. Colorimetric detection of sulfide based on target-induced shielding against the peroxidase-like activity of gold nanoparticles. *Anal Chim Acta*. 2014, 852: 218-222.
- De, S., Zhang, J., Luque, R., Yan, N. Ni-based bimetallic heterogeneous catalysts for energy and environmental applications. *Energy Environ. Sci.* 2016, 9: 3314-3347.
- Dokoutchaev, A., James, J.T., Koene, S.C., Pathak, S., Prakash, G.S., Thompson, M.E. Colloidal metal deposition onto functionalized polystyrene microspheres. *Chem. Mater.* 1999, 11: 2389-2399.
- Dong, B., Liu, G., Zhou, J., Wang, A., Wang, J., Jin, R., Lv, H. Biogenic gold nanoparticles-reduced graphene oxide nanohybrid: synthesis, characterization and application in chemical and biological reduction of nitroaromatics. *RSC Adv.* 2015, 5: 97798-97806.
- Dotzauer, D.M., Dai, J., Sun, L., Bruening, M.L. Catalytic membranes prepared using layer-by-layer adsorption of polyelectrolyte/metal nanoparticle films in porous supports. *Nano Lett.* 2006, 6: 2268-2272.
- Draget, K.I., Gaserod, O., Aune, I., Andersen, P.O., Storbakken, B., Stokke, B.T., Smidsrod, O. Effects of molecular weight and elastic segment flexibility on syneresis in Ca-alginate gels. *Food Hydrocoll.* 2001, 15: 485-490.

Draget, K.I., Skjak-Brek, G., Christensen, B.E., Gaserod, O., Smidsrod, O. Swelling and partial solubilization of alginic acid gel beads in acidic buffer. *Carbohydr. Polym.* 1996, 29: 209-215.

Ellis, W.C., Tran, C.T., Denardo, M.A., Fischer, A., Ryabov, A.D., Collins, T.J. Design of more powerful iron-TAML peroxidase enzyme mimics. *J. Am. Chem. Soc.* 2009, 131: 18052-18053.

Enache, T.A., Oliveira Brett, A.M. Pathways of electrochemical oxidation of indolic compounds. *Electroanal.* 2011, 23: 1337-1344.

Fageria, P., Uppala, S., Nazir, R., Gangopadhyay, S., Chang, C.H., Basu, M., Pande, S. Synthesis of monometallic (Au and Pd) and bimetallic (AuPd) nanoparticles using carbon nitride (C_3N_4) quantum dots via the photochemical route for nitrophenol reduction. *Langmuir*. 2016, 32: 10054-10064.

Fang, J., Zhang, B., Yao, Q., Yang, Y., Xie, J., Yan, N. Recent advances in the synthesis and catalytic applications of ligand-protected, atomically precise metal nanoclusters. *Coord. Chem. Rev.* 2016, 322:1-29.

Fan, L., Wang, K., Wei, J., Zhong, M., Wu, D., Zhu, H. Correlation between nanoparticle location and graphene nucleation in chemical vapour deposition of graphene. *J. Mater. Chem. A.* 2014, 2: 13123-13128.

Favier, F., Walter, E.C., Zach, M.P., Benter, T., Penner, R.M. Hydrogen sensors and switches from electrodeposited palladium mesowire arrays. *Science*. 2001, 293: 2227-2231.

Feng, J., Gao, C., Yin, Y. Stabilization of noble metal nanostructures for catalysis and sensing. *Nanoscale*. 2018, 10: 20492-20504.

Ferrer, D., Torres-Castro, A., Gao, X., Sepulveda-Guzman, S., Ortiz-Mendez, U., Jose-Yacaman, M. Three-layer core/shell structure in Au-Pd bimetallic nanoparticles. *Nano Lett.* 2007, 7: 1701-1705.

Fiorucci, A.R., Cavalheiro, E.T. The use of carbon paste electrode in the direct voltammetric determination of tryptophan in pharmaceutical formulations. *J Pharmaceut Biomed.* 2002, 28: 909-915.

Frey, G.D., Schutz, J., Herdtweck, E., Herrmann, W.A. Synthesis and characterization of N-heterocyclic carbene phospha-palladacycles and their properties in Heck catalysis. *Organometallics*. 2005, 24: 4416-4426.

- Ftouni, J., Penhoat, M., Addad, A., Payen, E., Rolando, C., Girardon, J.S. Highly controlled synthesis of nanometric gold particles by citrate reduction using the short mixing, heating and quenching times achievable in a microfluidic device. *Nanoscale*. 2012, 4, 4450-4454.
- Fu, G.D., Kang, E.T., Neoh, K.G. Three-dimensionally ordered porous membranes prepared via self-assembly and reverse micelle formation from well-defined amphiphilic block copolymers. *Langmuir*. 2005, 21: 3619-3624.
- Fu, G.D., Yuan, Z., Kang, E.T., Neoh, K.G., Lai, D.M., Huan, A.C. Nanoporous Ultra Low Dielectric Constant Fluoropolymer Films via Selective UV Decomposition of Poly (pentafluorostyrene)block Poly (methyl methacrylate) Copolymers Prepared Using Atom Transfer Radical Polymerization. *Adv Funct Mater*. 2005, 15: 315-322.
- Fu, H., Yang, X., Jiang, X., Yu, A. Bimetallic Ag–Au nanowires: synthesis, growth mechanism, and catalytic properties. *Langmuir*. 2013, 29: 7134-7142.
- Gan, L., Heggen, M., Rudi, S., Strasser, P. Core–Shell Compositional Fine Structures of Dealloyed Pt_xNi_{1-x} Nanoparticles and Their Impact on Oxygen Reduction Catalysis. *Nano Lett*. 2012, 12: 5423-5430.
- Gao, M.R., Liang, J.X., Zheng, Y.R., Xu, Y.F., Jiang, J., Gao, Q., Li, J., Yu, S.H. An efficient molybdenum disulfide/cobalt diselenide hybrid catalyst for electrochemical hydrogen generation. *Nat. Commun*. 2015, 6: 5982-5988.
- Gao, Y., Tang, P., Zhou, H., Zhang, W., Yang, H., Yan, N., Hu, G., Mei, D., Wang, J., Ma, D. Graphene Oxide Catalyzed C–H Bond Activation: The Importance of Oxygen Functional Groups for Biaryl Construction. *Angew. Chem. Int. Ed*. 2016, 55:3124-3128.
- Geim, A.K., Novoselov, K.S. The rise of graphene. *Nat. Mater*. 2007, 6:183-191.
- Ge, S., Zhang, Y., Zhang, L., Liang, L., Liu, H., Yan, M., Huang, J., Yu, J. Ultrasensitive electrochemical cancer cells sensor based on trimetallic dendritic Au@PtPd nanoparticles for signal amplification on lab-on-paper device. *Sens. Actuator B-Chem*. 2015, 220: 665-672.
- Gdaniec, M., Jankowski, W., Milewska, M.J., Polonski, T. Supramolecular Assemblies of Hydrogen Bonded Carboxylic Acid Dimers Mediated by Phenyl–Pentafluorophenyl Stacking Interactions. *Angew. Chem. Int. Ed*. 2003, 115: 4033-4036.
- Gittins, D.I., Caruso, F. Spontaneous phase transfer of nanoparticulate metals from organic to aqueous media. *Angew. Chem. Int. Ed*. 2001, 40: 3001-3004.

Gomez, M.V., Guerra, J., Velders, A.H., Crooks, R.M. NMR characterization of fourth-generation PAMAM dendrimers in the presence and absence of palladium dendrimer-encapsulated nanoparticles. *J. Am. Chem. Soc.* 2008, 131: 341-350.

Goncalves, G., Marques, P.A., Granadeiro, C.M., Nogueira, H.I., Singh, M.K., Gracio, J. Surface modification of graphene nanosheets with gold nanoparticles: the role of oxygen moieties at graphene surface on gold nucleation and growth. *Chem. Mater.* 2009, 21: 4796-4802.

Grabowska, B., Hodor, K., Kaczmarśka, K., Bobrowski, A., Kurleto-Koziol, Z., Fischer, C. Thermal analysis in foundry technology. *J. Therm. Anal. Calorim.* 2011, 130: 301-309.

Guo, S., Wen, D., Zhai, Y., Dong, S., Wang, E. Platinum nanoparticle ensemble-on-graphene hybrid nanosheet: one-pot, rapid synthesis, and used as new electrode material for electrochemical sensing. *ACS Nano.* 2010, 4: 3959-3968.

Gu, S., Wunder, S., Lu, Y., Ballauff, M., Fenger, R., Rademann, K., Jaquet, B., Zaccone, A. Kinetic analysis of the catalytic reduction of 4-nitrophenol by metallic nanoparticles. *J. Phys. Chem. C.* 2014, 118: 18618-18625.

Habas, S.E., Lee, H., Radmilovic, V., Somorjai, G.A., Yang, P. Shaping binary metal nanocrystals through epitaxial seeded growth. *Nat. Mater.* 2007, 6: 692-697.

Halder, A., Zhang, M., Chi, Q. Electrocatalytic Applications of Graphene-Metal Oxide Nanohybrid Materials. In Advanced Catalytic Materials-Photocatalysis and Other Current Trends, InTech, 2016.

Hancock, J.M., Rankin, W.M., Woolsey, B., Turley, R.S., Harrison, R.G. Controlled formation of ZnO hexagonal prisms using ethanolamines and water. *J Solgel Sci Technol.* 2017, 84: 214-221.

Han, J.T., Lee, D.H., Ryu, C.Y., Cho, K. Fabrication of superhydrophobic surface from a supramolecular organosilane with quadruple hydrogen bonding. *J. Am. Chem. Soc.* 2004, 126: 4796-4797.

Harada, M., Asakura, K., Toshima, N. Catalytic activity and structural analysis of polymer-protected gold/palladium bimetallic clusters prepared by the successive reduction of hydrogen tetrachloroaurate (III) and palladium dichloride. *J. Phys. Chem.* 1993, 97: 5103-14.

Haruta, M., Yamada, N., Kobayashi, T., Iijima, S. Gold catalysts prepared by coprecipitation for low-temperature oxidation of hydrogen and of carbon monoxide. *J. Catal.* 1989, 115: 301-309.

- Heli, H., Hajizadeh, M., Jabbari, A., Moosavi-Movahedi, A.A. Fine steps of electrocatalytic oxidation and sensitive detection of some amino acids on copper nanoparticles. *Anal. Biochem.* 2009, 388: 81-90
- Henry, C.R. Surface studies of supported model catalysts. *Surf Sci Rep.* 1998, 31: 231-325.
- Hoffman, A.S. Hydrogels for biomedical applications. *Adv. Drug Deliv. Rev.* 2012, 64: 18-23.
- Hong, W., Bai, H., Xu, Y., Yao, Z., Gu, Z., Shi, G. Preparation of gold nanoparticle/graphene composites with controlled weight contents and their application in biosensors. *J. Phys. Chem. C.* 2010, 114: 1822-1826.
- Hosoya, K., Ohtsuki, C., Kawai, T., Kamitakahara, M., Ogata, S.I., Miyazaki, T., Tanihara, M. A novel covalently crosslinked gel of alginate and silane with the ability to form bone like apatite. *J Biomed Mater Res A.* 2004, 71: 596-601.
- Hou, Z., Theyssen, N., Brinkmann, A., Leitner, W. Biphasic Aerobic Oxidation of Alcohols Catalyzed by Poly (ethylene glycol) Stabilized Palladium Nanoparticles in Supercritical Carbon Dioxide. *Angew. Chem. Int. Ed.* 2005, 117: 1370-1373.
- Huang, Y.X., Xie, J.F., Zhang, X., Xiong, L., Yu, H.Q. Reduced graphene oxide supported palladium nanoparticles via photoassisted citrate reduction for enhanced electrocatalytic activities. *ACS Appl. Mater. Interfaces.* 2014, 6: 15795-15801.
- Huang, Y., Zhang, X., Ringe, E., Ma, L., Zhai, X., Wang, L., Zhang, Z. Detailed correlations between SERS enhancement and plasmon resonances in subwavelength closely spaced Au nanorod arrays. *Nanoscale.* 2018, 10: 4267-4275.
- Huggins, K.N., Schoen, A.P., Arunagirinathan, M.A., Heilshorn, S.C. Multi Site Functionalization of Protein Scaffolds for Bimetallic Nanoparticle Templating. *Adv. Funct. Mater.* 2014, 24: 7737-7744.
- Hummers, Jr, W.S., Offeman, R.E. Preparation of graphitic oxide. *J. Am. Chem. Soc.* 1958, 80: 1339.
- Hupka, L., Nalaskowski, J., Miller, J.D. Interaction forces for symmetric hydrophilic and hydrophobic systems in aqueous isopropanol solutions. *Langmuir.* 2010, 26: 2200-2208.
- Hutchings, G.J., Haruta, M. A golden age of catalysis: A perspective. *Appl Catal A-Gen.* 2005, 291: 2-5.
- Hutchings, G.S., Zhang, Y., Li, J., Yonemoto, B.T., Zhou, X., Zhu, K., Jiao, F. In situ formation of cobalt oxide nanocubanes as efficient oxygen evolution catalysts. *J. Am. Chem. Soc.* 2015, 137: 4223-4229.

- Heli, H., Hajizadeh, M., Jabbari, A., Moosavi-Movahedi, A.A. Fine steps of electrocatalytic oxidation and sensitive detection of some amino acids on copper nanoparticles. *Anal. Biochem.* 2009, 388: 81-90
- Henry, C.R. Surface studies of supported model catalysts. *Surf Sci Rep.* 1998, 31: 231-325.
- Hoffman, A.S. Hydrogels for biomedical applications. *Adv. Drug Deliv. Rev.* 2012, 64: 18-23.
- Hong, W., Bai, H., Xu, Y., Yao, Z., Gu, Z., Shi, G. Preparation of gold nanoparticle/graphene composites with controlled weight contents and their application in biosensors. *J. Phys. Chem. C.* 2010, 114: 1822-1826.
- Hosoya, K., Ohtsuki, C., Kawai, T., Kamitakahara, M., Ogata, S.I., Miyazaki, T., Tanihara, M. A novel covalently crosslinked gel of alginate and silane with the ability to form bone like apatite. *J Biomed Mater Res A.* 2004, 71: 596-601.
- Hou, Z., Theyssen, N., Brinkmann, A., Leitner, W. Biphasic Aerobic Oxidation of Alcohols Catalyzed by Poly (ethylene glycol) Stabilized Palladium Nanoparticles in Supercritical Carbon Dioxide. *Angew. Chem. Int. Ed.* 2005, 117: 1370-1373.
- Huang, Y.X., Xie, J.F., Zhang, X., Xiong, L., Yu, H.Q. Reduced graphene oxide supported palladium nanoparticles via photoassisted citrate reduction for enhanced electrocatalytic activities. *ACS Appl. Mater. Interfaces.* 2014, 6: 15795-15801.
- Huang, Y., Zhang, X., Ringe, E., Ma, L., Zhai, X., Wang, L., Zhang, Z. Detailed correlations between SERS enhancement and plasmon resonances in subwavelength closely spaced Au nanorod arrays. *Nanoscale.* 2018, 10: 4267-4275.
- Huggins, K.N., Schoen, A.P., Arunagirinathan, M.A., Heilshorn, S.C. Multi Site Functionalization of Protein Scaffolds for Bimetallic Nanoparticle Templating. *Adv. Funct. Mater.* 2014, 24: 7737-7744.
- Hummers, Jr, W.S., Offeman, R.E. Preparation of graphitic oxide. *J. Am. Chem. Soc.* 1958, 80: 1339.
- Hupka, L., Nalaskowski, J., Miller, J.D. Interaction forces for symmetric hydrophilic and hydrophobic systems in aqueous isopropanol solutions. *Langmuir.* 2010, 26: 2200-2208.
- Hutchings, G.J., Haruta, M. A golden age of catalysis: A perspective. *Appl Catal A-Gen.* 2005, 291: 2-5.
- Hutchings, G.S., Zhang, Y., Li, J., Yonemoto, B.T., Zhou, X., Zhu, K., Jiao, F. In situ formation of cobalt oxide nanocubanes as efficient oxygen evolution catalysts. *J. Am. Chem. Soc.* 2015, 137: 4223-4229.

- Hu, X., Dong, S. Metal nanomaterials and carbon nanotubes—synthesis, functionalization and potential applications towards electrochemistry. *J. Mater. Chem.* 2008, 18: 1279-1295.
- Hu, Z., Oskam, G., Searson, P.C. Influence of solvent on the growth of ZnO nanoparticles. *J. Colloid Interface Sci.* 2003, 263: 454-460.
- Ibn-Elhaj, M., Schadt, M. Optical polymer thin films with isotropic and anisotropic nano-corrugated surface topologies. *Nature*. 2001, 410: 796-799.
- Indrasekara, A.D.S., Meyers, S., Shubeita, S., Feldman, L.C., Gustafsson, T., Fabris, L. Gold nanostar substrates for SERS-based chemical sensing in the femtomolar regime. *Nanoscale* 2014, 6: 8891-8899.
- Jabbour, J., Calas, S., Smaihi, M., Gatti, S., Etienne, P. Study of EETMOS hydrolysis and polycondensation by ^{29}Si NMR spectroscopy. Application to optical 3D waveguides fabrication. *J. Non-Cryst. Solids*. 2008, 354: 1001-1009.
- Jagur Grodzinski, J. Polymeric gels and hydrogels for biomedical and pharmaceutical applications. *Polym. Adv. Technol.* 2010, 21: 27-47.
- Jana, N.R., Gearheart, L., Murphy, C.J. Evidence for seed-mediated nucleation in the chemical reduction of gold salts to gold nanoparticles. *Chem. Mater.* 2001, 13: 2313-2322.
- Jang, H.D., Kim, S.K., Chang, H., Choi, J.W., Huang, J. Synthesis of graphene based noble metal composites for glucose biosensor. *Mater. Lett.* 2013, 106: 277-280.
- Jiang, C., Ranjit, S., Duan, Z., Zhong, Y.L., Loh, K.P., Zhang, C., Liu, X. Nanocontact-induced catalytic activation in palladium nanoparticles. *Nanoscale*. 2009, 1: 391-394.
- Jeyadevan, B., Cuya, J.L., Inoue, Y., Shinoda, K., Ito, T., Mott, D., Higashimine, K., Maenosono, S., Matsumoto, T., Miyamura, H. Novel nickel–palladium catalysts encased in a platinum nanocage. *RSC Advances*. 2014, 4: 26667-26672.
- Jin, M., Wang, J., Yao, X., Liao, M., Zhao, Y., Jiang, L. Underwater Oil Capture by a Three Dimensional Network Architectured Organosilane Surface. *Adv. Mater.* 2011, 23: 2861-2864.
- Johnston, A.P., Cortez, C., Angelatos, A.S., Caruso, F. Layer-by-layer engineered capsules and their applications. *Curr. Opin. Colloid Interface Sci.* 2006, 11: 203-209.
- Joo, S.H., Choi, S.J., Oh, I., Kwak, J., Liu, Z., Terasaki, O., Ryoo, R. Ordered nanoporous arrays of carbon supporting high dispersions of platinum nanoparticles. *Nature*. 2001, 412: 169-172.

- Jv, Y., Li, B., Cao, R. Positively-charged gold nanoparticles as peroxidase mimic and their application in hydrogen peroxide and glucose detection. *Chem. Commun.* 2010, 46: 8017-8019.
- Kang, S.W., Lee, Y.W., Park, Y., Choi, B.S., Hong, J.W., Park, K.H., Han, S.W. One-pot synthesis of trimetallic Au@PdPt core-shell nanoparticles with high catalytic performance. *ACS Nano*. 2013, 7: 7945-7955.
- Kannan, P., Dolinska, J., Maiyalagan, T., Opallo, M. Facile and rapid synthesis of Pd nanodendrites for electrocatalysis and surface-enhanced Raman scattering applications. *Nanoscale*. 2014, 6: 11169-11176.
- Kareem, H., Shan, S., Lin, F., Li, J., Wu, Z., Prasai, B., O'Brien, C.P., Lee, I.C., Tran, D.T., Yang, L., Mott, D. Evolution of surface catalytic sites on thermochemically-tuned gold-palladium nanoalloys. *Nanoscale*. 2018, 10: 3849-3862.
- Kedem, O., Wohlleben, W., Rubinstein, I. Distance-dependent fluorescence of tris (bipyridine) ruthenium (II) on supported plasmonic gold nanoparticle ensembles. *Nanoscale*. 2014, 6: 15134-15143.
- Khanal, S., Bhattacharai, N., Velazquez-Salazar, J.J., Bahen, D., Soldano, G., Ponce, A., Mariscal, M.M., Mejia-Rosales, S., Jose-Yacaman, M. Trimetallic nanostructures: the case of AgPd-Pt multiply twinned nanoparticles. *Nanoscale*. 2013, 5: 12456-12463.
- Kidambi, S., Bruening, M.L. Multilayered polyelectrolyte films containing palladium nanoparticles: synthesis, characterization, and application in selective hydrogenation. *Chem. Mater.* 2005, 17: 301-307.
- Kidambi, S., Dai, J., Li, J., Bruening, M.L. Selective hydrogenation by Pd nanoparticles embedded in polyelectrolyte multilayers. *J. Am. Chem. Soc.* 2004, 126: 2658-2659.
- Kim, H., Hong, H.J., Jung, J., Kim, S.H., Yang, J.W. Degradation of trichloroethylene (TCE) by nanoscale zero-valent iron (nZVI) immobilized in alginate bead. *J. Hazard. Mater.* 2010, 176: 1038-10343.
- Kimura, K., Sunagawa, T., Yokoyama, M. Applications of Sol-Gel-Derived Membranes to Neutral Carrier-Type Ion-Sensitive Field-Effect Transistors. *Anal. Chem.* 1997, 69: 2379-2383.
- Kim, Y.K., Han, S.W., Min, D.H. Graphene oxide sheath on Ag nanoparticle/graphene hybrid films as an antioxidative coating and enhancer of surface-enhanced Raman scattering. *ACS Appl. Mater. Interfaces*. 2012, 4: 6545-6551.

- Kim, S.W., Park, J., Jang, Y., Chung, Y., Hwang, S., Hyeon, T., Kim, Y.W. Synthesis of monodisperse palladium nanoparticles. *Nano Lett.* 2003, 3: 1289-1291.
- Kobayashi, H., Yamauchi, M., Ikeda, R., Kitagawa H. Atomic-level Pd–Au alloying and controllable hydrogen-absorption properties in size-controlled nanoparticles synthesized by hydrogen reduction. *Chem. Commun.* 2009, 32: 4806-4808.
- Kong, D., Wang, H., Lu, Z., Cui, Y. CoSe₂ nanoparticles grown on carbon fiber paper: an efficient and stable electrocatalyst for hydrogen evolution reaction. *J. Am. Chem. Soc.* 2014, 136: 4897-4900.
- Konios, D., Stylianakis, M.M., Stratakis, E., Kymakis, E. Dispersion behaviour of graphene oxide and reduced graphene oxide. *J. Colloid Interface Sci.* 2014, 430: 108-112.
- Kuang, Y., Du, J., Zhou, R., Chen, Z., Megharaj, M., Naidu, R. Calcium alginate encapsulated Ni/Fe nanoparticles beads for simultaneous removal of Cu (II) and monochlorobenzene. *J. Colloid Interface Sci.* 2015, 447: 85-91.
- Kumar, S.S., Kwak, K., Lee, D. Electrochemical sensing using quantum-sized gold nanoparticles. *Anal. Chem.* 2011, 83: 3244-3247.
- Kuroda, K., Ishida, T., Haruta, M. Reduction of 4-nitrophenol to 4-aminophenol over Au nanoparticles deposited on PMMA. *J. Mol. Catal.* 2009, 298: 7-11.
- Lakowicz, J.R., 2005. Radiative decay engineering 5: metal-enhanced fluorescence and plasmon emission. *Anal. Biochem.* 337: 171-194.
- Lakowicz, J.R., Ray, K., Chowdhury, M., Szmacinski, H., Fu, Y., Zhang, J., Nowaczyk, K. Plasmon-controlled fluorescence: a new paradigm in fluorescence spectroscopy. *Analyst.* 133: 1308-1346.
- Lakshminarayana, G., Nogami, M. Synthesis and characterization of proton conducting inorganic– organic hybrid nanocomposite membranes based on mixed PWA-PMA-TEOS-GPTMS-H₃PO₄-APTES for H₂/O₂ fuel cells. *J. Phys. Chem.C.* 2009, 113: 14540-14550.
- Larsen, R., Ha, S., Zakzeski, J., Masel, R.I. Unusually active palladium-based catalysts for the electrooxidation of formic acid. *J. Power Sources.* 2006, 157: 78-84.
- Lee, D., Rubner, M.F., Cohen, R.E. All-nanoparticle thin-film coatings. *Nano Lett.* 2006, 6: 2305-2312.
- Lee, I., Delbecq, F., Morales, R., Albiter, M.A., Zaera, F. Tuning selectivity in catalysis by controlling particle shape. *Nat. Mater.* 2009, 8: 132-138.

- Lee, J.S., Kim, S.G., Cho, S., Jang, J. Porous palladium coated conducting polymer nanoparticles for ultrasensitive hydrogen sensors. *Nanoscale*. 2015, 7: 20665-20673.
- Lee, K.Y., Rowley, J.A., Eiselt, P., Moy, E.M., Bouhadir, K.H., Mooney, D.J. Controlling mechanical and swelling properties of alginate hydrogels independently by cross-linker type and cross-linking density. *Macromolecules*. 2000, 33: 4291-4294.
- Lee, Y.W., Kim, M., Han, S.W., Shaping Pd nanocatalysts through the control of reaction sequence. *Chem. Commun.* 2010, 46: 1535-1537.
- Lee, Y.W., Kim, M., Kim, Z.H., Han, S.W. One-step synthesis of Au@Pd core-shell nanoctahedron. *J. Am. Chem. Soc.* 2009, 131: 17036-17037.
- Lev, O., Wu, Z., Bharathi, S., Glezer, V., Modestov, A., Gun, J., Rabinovich, L., Sampath, S. Sol-gel materials in electrochemistry. *Chem. Mater.* 1997, 9: 2354-2375.
- Lewis, N.S., Nocera, D.G. Powering the planet: Chemical challenges in solar energy utilization. *Proceedings of the National Academy of Sciences*. 2006, 103: 15729-15735.
- Li, D., Atake, I., Shishido, T., Oumi, Y., Sano, T., Takehira, K. Self-regenerative activity of Ni/Mg (Al) O catalysts with trace Ru during daily start-up and shut-down operation of CH₄ steam reforming. *J. Catal.* 2007, 250: 299-312.
- Li, D., Nakagawa, Y., Tomishige, K. Methane reforming to synthesis gas over Ni catalysts modified with noble metals. *Appl. Catal., A*. 2011, 408: 1-24.
- Liao, F., Lo, T.W., Tsang, S.C. Recent Developments in Palladium Based Bimetallic Catalysts. *ChemCatChem*. 2015, 7: 1998-2014.
- Lim, B., Jiang, M., Camargo, P.H., Cho, E.C., Tao, J., Lu, X., Zhu, Y., Xia, Y. Pd-Pt bimetallic nanodendrites with high activity for oxygen reduction. *Science*. 2009, 324: 1302-1305.
- Lim, B., Kobayashi, H., Yu, T., Wang, J., Kim, M.J., Li, Z.Y., Rycenga, M., Xia, Y. Synthesis of Pd-Au bimetallic nanocrystals via controlled overgrowth. *J. Am. Chem. Soc.* 2010, 132: 2506-2507.
- Lim, S.I., Ojea-Jimenez, I., Varon, M., Casals, E., Arbiol, J., Puntes, V. Synthesis of platinum cubes, polypods, cuboctahedrons, and raspberries assisted by cobalt nanocrystals. *Nano Lett.* 2010, 10: 964-973.
- Li, N., Wang, W., Tian, D., Cui, H. pH-dependent catalytic properties of Pd-Ag nanoparticles in luminol chemiluminescence. *Chem. Commun.* 2010, 46: 1520-1522.
- Lin, Y., Li, Z., Chen, Z., Ren, J., Qu, X. Mesoporous silica-encapsulated gold nanoparticles as artificial enzymes for self-activated cascade catalysis. *Biomaterials*. 2013, 34: 2600-2610.

- Li, Q., Xing, Z., Wang, D., Sun, X., Yang, X. In situ electrochemically activated CoMn-S@NiO/CC nanosheets array for enhanced hydrogen evolution. *ACS Catal.* 2016, 6: 2797-2801.
- Liu, C.H., Liu, R.H., Sun, Q.J., Chang, J.B., Gao, X., Liu, Y., Lee, S.T., Kang, Z.H., Wang SD. Controlled synthesis and synergistic effects of graphene-supported PdAu bimetallic nanoparticles with tunable catalytic properties. *Nanoscale*. 2015, 7: 6356-6362.
- Liu, C.J., Burghaus, U., Besenbacher, F., Wang, Z.L. Preparation and characterization of nanomaterials for sustainable energy production. *ACS Nano*. 2010, 4: 5517-5526.
- Liu, L., Corma, A. Metal catalysts for heterogeneous catalysis: From single atoms to nanoclusters and nanoparticles. *Chem. Rev.* 2018, 118: 4981-5079.
- Liu, X., Wang, D., Li, Y. Synthesis and catalytic properties of bimetallic nanomaterials with various architectures. *Nano Today*. 2012, 7: 448-466.
- Liu, Y., Fang, Z., Kuai, L., Geng, B. One-pot facile synthesis of reusable tremella-like M 1@M 2@M 1(OH) 2 (M 1=Co, Ni, M 2=Pt/Pd, Pt, Pd and Au) three layers core-shell nanostructures as highly efficient catalysts. *Nanoscale*. 2014, 6: 9791-9797.
- Liu, Z., Zhang, T., Shi, M. Cyclometalated cis-chelated bidentate N-heterocyclic carbene palladium complexes: synthetic, structural, and catalytic studies. *Organometallics*. 2008, 27: 2668-2671.
- Li, X.B., Gao, Y.J., Wu, H.L., Wang, Y., Guo, Q., Huang, M.Y., Chen, B., Tung, C.H., Wu, L.Z. Assembling metallic 1T-MoS₂ nanosheets with inorganic-ligand stabilized quantum dots for exceptional solar hydrogen evolution. *Chem. Commun.* 2017, 53: 5606-5609.
- Li, X., Yu, J., Low, J., Fang, Y., Xiao, J., Chen, X. Engineering heterogeneous semiconductors for solar water splitting. *J. Mater. Chem. A*. 2015, 3: 2485-2534.
- Li, Y., El-Sayed, M.A. The effect of stabilizers on the catalytic activity and stability of Pd colloidal nanoparticles in the Suzuki reactions in aqueous solution. *J. Phys. Chem. B*. 2001, 105: 8938-8943.
- Li, Y., Wang, H., Xie, L., Liang, Y., Hong, G., Dai, H. MoS₂ nanoparticles grown on graphene: an advanced catalyst for the hydrogen evolution reaction. *J. Am. Chem. Soc.* 2011, 133: 7296-7299.
- Li, Z., Gao, J., Xing, X., Wu, S., Shuang, S., Dong, C., Paau, M.C., Choi, M.M. Synthesis and characterization of n-alkylamine-stabilized palladium nanoparticles for electrochemical oxidation of methane. *J. Phys. Chem. C*. 2009, 114: 723-733.

- Liz-Marzan, L.M., Philipse, A.P. Stable hydrosols of metallic and bimetallic nanoparticles immobilized on imogolite fibers. *J. Phys. Chem.* 1995, 99: 15120-15128.
- Lombardi, J.R., Birke, R.L. A unified approach to surface-enhanced Raman spectroscopy. *The J. Phys. Chem. C*. 2008, 112: 5605-5617.
- Long, X., Li, J., Xiao, S., Yan, K., Wang, Z., Chen, H., Yang, S. A strongly coupled graphene and FeNi double hydroxide hybrid as an excellent electrocatalyst for the oxygen evolution reaction. *Angew. Chem. Int. Ed.* 2014, 126: 7714-7718.
- Lu, C.H., Liu, R.H., Sun, Q.J., Chang, J.B., Gao, X., Liu, Y., Lee, S.T., Kang, Z.H., Wang, S.D. Controlled synthesis and synergistic effects of graphene-supported PdAu bimetallic nanoparticles with tunable catalytic properties. *Nanoscale*. 2015, 7; 6356-6362.
- Lu, P., Teranishi, T., Asakura, K., Miyake, M., Toshima, N. Polymer-protected Ni/Pd bimetallic nano-clusters: preparation, characterization and catalysis for hydrogenation of nitrobenzene. *J. Phys. Chem. B*. 1999, 103: 9673-9682.
- Lu, X., Zhao, C. Electrodeposition of hierarchically structured three-dimensional nickel–iron electrodes for efficient oxygen evolution at high current densities. *Nat. Commun.* 2015, 6: 6616-6622.
- Macanas, J., Ouyang, L., Bruening, M.L., Munoz, M., Remigy, J.C., Lahitte, J.F. Development of polymeric hollow fiber membranes containing catalytic metal nanoparticles. *Catal. Today*. 2010, 156: 181-186.
- MacDonald, S.M., Roscoe, S.G. Electrochemical oxidation reactions of tyrosine, tryptophan and related dipeptides. *Electrochim. Acta*. 1997, 42: 1189-1200.
- Mai, N.T., Mott, D., Maenosono, S. Anisotropic Nanoparticles for Efficient Thermoelectric Devices. *Complex Shaped Metal Nanoparticles: Bottom Up Syntheses and Applications*. Japan, 2012.
- Majdi, S., Jabbari, A., Heli, H., Moosavi-Movahedi, A.A. Electrocatalytic oxidation of some amino acids on a nickel–curcumin complex modified glassy carbon electrode. *Electrochim. Acta*. 2007, 52: 4622-4629.
- Ma, L., Ting, L.R., Molinari, V., Giordano, C., Yeo, B.S. Efficient hydrogen evolution reaction catalyzed by molybdenum carbide and molybdenum nitride nanocatalysts synthesized via the urea glass route. *J. Mater. Chem. A*. 2015, 3: 8361-8368.
- Manukyan, K.V., Cross, A., Rouvimov, S., Miller, J., Mukasyan, A.S., Wolf, E.E. Low temperature decomposition of hydrous hydrazine over FeNi/Cu nanoparticles. *Appl. Catal.* 2014, 476: 47-53.

- Mayer-Gall, T., Birkner, A., Dyker, G. Pyridyl-substituted porphyrins on palladium nanoparticles. *J. Organomet. Chem.* 2008, 693: 1-3.
- Mazumder, V., Chi, M., More, K.L., Sun, S. Core/shell Pd/FePt nanoparticles as an active and durable catalyst for the oxygen reduction reaction. *J. Am. Chem. Soc.* 2010, 132: 7848-7849.
- Mazumder, V., Sun, S. Oleylamine-mediated synthesis of Pd nanoparticles for catalytic formic acid oxidation. *J. Am. Chem. Soc.* 2009, 131: 4588-4589.
- Mba, M., Pontini, M., Lovat, S., Zonta, C., Bernardinelli, G., Kundig, P.E., Licini, G. C₃ Vanadium (V) amine triphenolate complexes: Vanadium haloperoxidase structural and functional models. *Inorg. Chem.* 2008, 47: 8616-8618.
- McKone, J.R., Marinescu, S.C., Brunschwig, B.S., Winkler, J.R., Gray, H.B. Earth-abundant hydrogen evolution electrocatalysts. *Chem. Sci.* 2014, 5: 865-878.
- Mei, Y., Sharma, G., Lu, Y., Ballauff, M., Drechsler, M., Irrgang, T., Kempe, R. High catalytic activity of platinum nanoparticles immobilized on spherical polyelectrolyte brushes. *Langmuir*. 2005, 21: 12229-12234.
- Mejia-Rosales, S.J., Fernandez-Navarro, C., Perez-Tijerina, E., Montejano-Carrizales, J.M., Jose-Yacaman, M. Two-stage melting of Au-Pd nanoparticles. *J. Phys. Chem. B*. 2006, 110: 12884-12889.
- Meyer, D., Taige, M.A., Zeller, A., Hohlfeld, K., Ahrens, S., Strassner, T. Palladium complexes with pyrimidine-functionalized N-heterocyclic carbene ligands: Synthesis, structure and catalytic activity. *Organometallics*. 2009, 28: 2142-2149.
- Milakin, K.A., Korovin, A.N., Moroz, E.V., Levon, K., Guiseppi Elie, A., Sergeyev, V.G. Polyaniline Based Sensor Material for Potentiometric Determination of Ascorbic Acid. *Electroanal.* 2013, 25:1323-1330.
- Millstone, J.E., Wei, W., Jones, M.R., Yoo, H., Mirkin, C.A. Iodide ions control seed-mediated growth of anisotropic gold nanoparticles. *Nano Lett.* 2008, 8: 2526-2529.
- Mohanty, A., Garg, N., Jin, R. A universal approach to the synthesis of noble metal nanodendrites and their catalytic properties. *Angew. Chem. Int. Ed.* 2010, 49: 4962-4966.
- Morales-Guio, C.G., Hu, X. Amorphous molybdenum sulfides as hydrogen evolution catalysts. *Acc. Chem. Res.* 2014, 47: 2671-2681.
- Morales-Guio, C.G., Stern, L.A., Hu, X. Nanostructured hydrotreating catalysts for electrochemical hydrogen evolution. *Chem. Soc. Rev.* 2014, 43: 6555-6569.

- Moulder, J.F., Stickle, W.F., Sobol, P.E., Bomben, K.D. *Handbook of X-ray Photoelectro Spectroscopy*, Phys. Elec. Inc., Eden Praire, Minnesota, USA. 1995.
- Mun, J.H., Chang, Y.H., Shin, D.O., Yoon, J.M., Choi, D.S., Lee, K.M., Kim, J.Y., Cha, S.K., Lee, J.Y., Jeong, J.R., Kim, Y.H. Monodisperse pattern nanoalloying for synergistic intermetallic catalysis. *Nano Lett.* 2013, 13: 5720-5726.
- Nagaoka, K., Jentys, A., Lercher, J.A. Methane autothermal reforming with and without ethane over mono-and bimetal catalysts prepared from hydrotalcite precursors. *J. Catal.* 2005, 229: 185-196.
- Narayanan, R., El-Sayed, M.A. Carbon-supported spherical palladium nanoparticles as potential recyclable catalysts for the Suzuki reaction. *J. Catal.* 2005, 234: 348-355.
- Niu, Y., Yeung, L.K., Crooks, R.M. Size-selective hydrogenation of olefins by dendrimer-encapsulated palladium nanoparticles. *J. Am. Chem. Soc.* 2001, 123: 6840-6846.
- Nocera, D.G. The artificial leaf. *Acc. Chem. Res.* 2012, 45: 767-776.
- Ogihara, H., Xie, J., Okagaki, J., Saji, T. Simple method for preparing superhydrophobic paper: spray-deposited hydrophobic silica nanoparticle coatings exhibit high water-repellency and transparency. *Langmuir*. 2012, 28: 4605-4608.
- Ogura, K., Kobayashi, M., Nakayama, M., Miho, Y. In-situ FTIR studies on the electrochemical oxidation of histidine and tyrosine. *J. Electroanal. Chem.* 1999, 463: 218-223.
- Oliaee, S.N., Zhang, C., Hwang, S.Y., Cheung, H.M., Peng, Z. Hydrogen production via hydrazine decomposition on model platinum–nickel nanocatalyst with a single (111) facet. *J. Phys. Chem. C*. 2016, 120: 9764-9772.
- Orimo, S.I., Nakamori, Y., Eliseo, J.R., Zuttel, A., Jensen, C.M. Complex hydrides for hydrogen storage. *Chem. Rev.* 2007, 107: 4111-4132.
- Pandey, G., “3-aminopropyltrimethoxysilane mediated synthesis of gold nanoparticles and its multimetallic analogues,” Ph.D. Thesis, Indian Institute of Technology (Banaras Hindu University), Varanasi, India, 2016.
- Pandey, P.C., Chauhan, D.S. 3-Glycidoxypolypropyltrimethoxysilane mediated in situ synthesis of noble metal nanoparticles: Application to hydrogen peroxide sensing. *Analyst*. 2012a, 137: 376-385.
- Pandey, P.C., Pandey, A.K. Cyclohexanone and 3-aminopropyltrimethoxysilane mediated controlled synthesis of mixed nickel-iron hexacyanoferrate nanosol for selective sensing of glutathione and hydrogen peroxide. *Analyst*. 2013, 138:952-959.

- Pandey, P.C., Pandey, A.K., Pandey, G. Functionalized Alkoxy silane Mediated Controlled Synthesis of Noble Metal Nanoparticles Dispersible in Aqueous and Non-Aqueous Medium. *J. Nanosci. Nanotechnol.* 2014, 14: 6606-6613.
- Pandey, P.C., Pandey, A.K. Size-dependence enhancement in electrocatalytic activity of NiHCF-gold nanocomposite: potential application in electrochemical sensing. *Analyst*. 2012b, 137: 3306-3313.
- Pandey, P.C., Pandey, G. One-pot two-step rapid synthesis of 3-aminopropyltrimethoxysilane-mediated highly catalytic Ag@(PdAu) trimetallic nanoparticles. *Catal Sci Technol*. 2016, 6: 3911-3917.
- Pandey, P.C., Pandey, G. Synthesis of gold nanoparticles resistant to pH and salt for biomedical applications; functional activity of organic amine. *J. Mater. Res.* 2016, 31: 3313-3323.
- Pandey, P.C., Prakash, A. Electrochemistry of redox mediators encapsulated within organically modified silicate matrix in the presence of TiO₂ and palladium nanoparticles; application on electroanalysis of ascorbic acid. *J. Electroanal. Chem.* 2014, 729: 95-102.
- Pandey, P.C., Prakash, R. Characterization of Electropolymerized Polyindole Application in the Construction of a Solid State, Ion Selective Electrode. *J. Electrochem. Soc.* 1998, 145: 4103-4107.
- Pandey, P.C., Singh, R. Controlled Synthesis of Functional Silver Nanoparticles Dispersible in Aqueous and Non-Aqueous Medium. *J. Nanosci Nanotechnol*. 2015, 15: 5749-5759.
- Pandey, P.C., Singh, R. Controlled synthesis of Pd and Pd-Au nanoparticles: effect of organic amine and silanol groups on morphology and polycrystallinity of nanomaterials. *RSC Adv.* 2015, 5: 10964-10973.
- Pandey, P.C., Singh, R., Pandey, A.K. Tetrahydrofuran hydroperoxide and 3-Aminopropyl trimethoxysilane mediated controlled synthesis of Pd, Pd-Au, Au-Pd nanoparticles: Role of Palladium nanoparticles on the redox electrochemistry of ferrocene monocarboxylic acid. *Electrochim. Acta*. 2014, 138: 163-173.
- Pandey, P., Upadhyay, B.C. Role of palladium in the redox electrochemistry of ferrocene monocarboxylic acid encapsulated within ORMSIL networks. *Molecules*. 2005, 10: 728-739.
- Pandey, P.C., Upadhyay, S., Shukla, N.K., Sharma, S. Studies on the electrochemical performance of glucose biosensor based on ferrocene encapsulated ORMSIL and glucose oxidase modified graphite paste electrode. *Biosens Bioelectron*. 2003a, 18: 1257-1268.