

REFERENCES

References

References

Abbasi, T., "Renewable energy sources: their impact on global warming and pollution," Prentice-Hall of India Pvt. Ltd., (2010) (pp.154).

Alhassan F.H., Yunus R., Rashid U., Sirat K., Islam A., Lee H.V. et al., "Production of biodiesel from mixed waste vegetable oils using Ferric hydrogen sulphate as an effective reusable heterogeneous solid acid catalyst," *Applied Catalysis A: General*, **456**(2013)182–187.

Almeida V.F., García-Moreno P.J., Guadix A., Guadix E.M., "Biodiesel production from mixtures of waste fish oil, palm oil and waste frying oil: optimization of fuel properties," *Fuel Process. Technol.*, **133**(2015)152–160.

An H., Yang W.M., Maghbouli A., Li J., Chou S.K., Chua K.J., "Performance, combustion and emission characteristics of biodiesel derived from waste cooking oils," *Applied Energy*, **112**(2013)493–499.

Annual Report 2006–2007, Ministry of Petroleum and Natural Gas (MoPNG), Govt. Of India, (2007).

Aranda D.A.G., Santos R.T.P., Tapanes N.C.O., Ramos A.L.D., Antunes O.A.C., "Acid-catalysed homogeneous esterification reaction for biodiesel production from palm fatty acids," *Catal. Lett.*, **122**(2007)20–25.

Avinash A., Subramaniam D., Murugesan A., "Bio-diesel—A global scenario," *Renewable and Sustainable Energy Reviews*, **29**(2014)517–527.

Azam M.M., Waris A., Nahar N.M., "Prospects and potential of fatty acid methyl esters of some non-traditional seed oils for use as biodiesel in India," *Biomass Bioenergy*, **29**(2005)293–302.

Bajhaiya A.K., Mandotra S.K., Suseela M.R., Toppo K., Ranade S., "ALGAL BIODIESEL: the next generation biofuel for India," *Asian J. Exp. Biol. Sci.*, (1),**4**(2010)728-739.

References

Baka J., "What wastelands? A critique of biofuel policy discourse in South India," *Geoforum*, **54**(2014)315–323.

Balsamo N.F., Sapag K., Oliva M.I. et al., "Mixed oxides tuned with alkaline metals to improve glycerolysis for sustainable biodiesel production," *Catalysis Today*, **279**(2017)209-216.

Banerjee A., Sharma R., Chisti Y., Banerjee U.C., "Botryococcus braunii: a renewable source of hydrocarbons and other chemicals," *Crit. Rev. Biotechnol.*, **22**(2002)245–279.

Bari S., "Performance, combustion and emission tests of a metro-bus running on biodiesel-ULSD blended (B20) fuel," *Applied Energy*, **124**(2014)35–43.

Biofuels Annual Report (India), Jul 2014.

Biofuels Knight, Their impact on crop production worldwide, *Aspects of Applied Biology*, **10**(2010)1–8.

Birla A., Singh B., Upadhyay S.N., Sharma Y.C., "Kinetics studies of synthesis of biodiesel from waste frying oil using a heterogeneous catalyst derived from snail shell," *Bioresour. Technol.*, **106**(2012)95–100.

Bisen P.S., Sanodiya B.S., Thakur G.S., Baghel R.K., Prasad G.B.K.S., "Biodiesel production with special emphasis on lipase-catalyzed transesterification," *Biotechnol. Lett.*, **32**(2010)1019-1030.

Blanco et al., "Compilation from several sources, including Mitchel 2011, 2010, U.S. Department of Agriculture, Global Agriculture Information Network (GAIN) biofuels reports, various countries and years," (2010).

Bobade S., Khyade V., "Preparation of methyl ester (biodiesel) from karanja (*Pongamia pinnata*) oil," *Res. J. Chem. Sci.*, **606**(2012)2231-2238.

Borges L.D., Moura N.N., Costa A.A., Braga P.R.S., Dias J.A., Dias S.C.L. et al., "Investigation of biodiesel production by HUSY and Ce/HUSY zeolites: influence of structural and acidity parameters," *Applied Catalysis A: General*, **450**(2013)114–119.

BP Energy Outlook 2035 (bp.com/energyoutlook #BPstats January 2014).

References

BP Statistical Review of World Energy 2013 and includes data from F.O. Lichts; US Energy Information Administration.

Borilo L., Spivakova L., "Synthesis and characterization of ZrO₂ thin films," Am. J. Mater. Sci., (2),**4**(2012)119–124.

Boschini F., Robertz B., Rulmont A., Cloots R., "Preparation of nanosized barium zirconate powder by thermal decomposition of urea in an aqueous solution containing barium and zirconium, and by calcination of the precipitate," J. Eur. Ceram. Soc., **23**(2003)3035–3042.

Brennan L., Owende P., "Biofuels from microalgae- a review of technologies for production, processing, and extractions of biofuels and co-products," Renew. Sustain. Energy Rev., **14**(2010)557-577.

Brunauer S., Emmett P. H., Teller E., "Adsorption of gases in multi-molecular layers," Journal of American Chemical Society, **60**(1938) 309-319.

Chai F., Cao F.H., Zhai F.Y., Chen Y., Wang X.H., Su Z.M., "Transesterification of vegetable oil to biodiesel using a heteropolyacid solid catalyst," Adv. Synth. Catal., **349**(2007)1057–1065.

Canakci M., "The potential of restaurant waste lipids as biodiesel feedstocks," Bioresour. Technol., **98**(2007)183–190.

Canakci M., Erdil A., Arcaklioglu E., "Performance and exhaust emissions of a biodiesel engine," Applied Energy, **83**(2006)594–605.

Canoira L., Alcantara R., Garcia-Martinez J., Carrasco J., "Biodiesel from Jojoba oil wax: transesterification with methanol and properties as a fuel," Biomass Bioenergy, **30**(2006)76–81.

Celikten I., Koca A., Arslan M.A., "Comparison of performance and emissions of diesel fuel, rapeseed and soybean oil methyl esters injected at different pressures," Renew. Energy, **35**(2010)814–820.

References

- Chakraborty R., Bepari S., Banerjee A., "Application of calcined waste fish (*Labeo rohita*) scale as low-cost heterogeneous catalyst for biodiesel synthesis," *Bioresour. Technol.*, **102**(2011)3610-3618.
- Chankya H., Mahapatra D., Sarada R., Chauhan V.S., Abitha R., "Sustainability of large-scale algal biofuel production in India," *Journal of the Indian Institute of Science*, **92**(2012)63-98.
- Chattopadhyay S., Sen R., "Fuel properties, engine performance and environmental benefits of biodiesel produced by a green process," *Applied Energy*, **105**(2013)319-326.
- Chen C.L., Huang C.C., Tran D.T., Chang J.S., "Biodiesel synthesis via heterogeneous catalysis using modified strontium oxides as the catalysts," *Bioresour. Technol.*, **113**(2012)8-13.
- Chen G.Y., Shan R., Shi J.F., Yan B.B., "Ultrasonic-assisted production of biodiesel from transesterification of palm oil over ostrich eggshell-derived CaO catalysts," *Bioresour. Technol.*, **171**(2014)428-432.
- Chiras D.D., "The homeowner's guide to renewable energy: achieving energy independence through solar, wind, biomass and hydropower" (6th ed.): Canada: New Society, (2006) 22.
- Chisti Y., "Biodiesel from microalgae," *Biotechnol. Adv.*, (25),**3**(2007)294-306.
- Chung K-H., Kim J., Lee K-Y., "Biodiesel production by transesterification of duck tallow with methanol on alkali catalysts," *Biomass Bioenergy*, **33**(2009)155-158.
- CII, "Estimation of Energy and Carbon Balance of Biofuels in India," Confederation of Indian Industry (2010).
- COM (2006) 34 final, "An EU strategy for biofuels," Commission of the European Communities, Brussels, 8.2.2006.
- Dehkordi A.M., Ghasemi M., "Transesterification of waste cooking oil to biodiesel using Ca and Zr mixed oxides as heterogeneous base catalysts," *Fuel Process. Technol.*, **97**(2012)45-51.

References

Demirbas A., "Progress and recent trends in biodiesel fuels," *Energy Conversion and Management*, (50),1(2009)14–34.

Devi B.L.A.P., Reddy T.V.K., Lakshmi K.V., Prasad R.B.N., "A green recyclable SO₃H-carbon catalyst derived from glycerol for the production of biodiesel from FFA-containing karanja (*Pongamia glabra*) oil in a single step," *Bioresource Technology*, **153**(2014)370-373.

Dewulf J., Van Langenhove H., "Renewables-based technology: sustainability assessment," John Wiley & Sons, Ltd; (2006).

Deydier E., Guilet R., Sarda S., Sharrock P., "Physical and chemical characterization of crude meat and bone meal combustion residue: waste or raw material," *J. Hazard. Mater.*, **121**(2005)141–148.

Dias J.M., Alvim-Ferraz M.C.M., Almeida M.F., "Comparison of the performance of different homogeneous alkali catalysts during transesterification of waste and virgin oils and evaluation of biodiesel quality," *Fuel*, **87**(2008)3572–3578.

Dimovic S., Smiciklas I., Plecas I., Antonovic D., Mitric M., "Comparative study of differently treated animal bones for CO₂ + removal," *J. Hazard. Mater.*, **164**(2009)279–287.

Ding Y., Sun H., Duan J., Chen P., Lou H., Zheng X., "Mesoporous Li/ZrO₂ as a solid base catalyst for biodiesel production from transesterification of soybean oil with methanol," *Catal. Commun.*, (12),**7**(2011)606–610.

Duckett S., Gilbert B., "Foundation of spectroscopy: New York: Oxford University Press," 2000.

Dupont J., Suarez P.A.Z., Meneghetti M.R., Meneghetti S.M.P., "Catalytic production of biodiesel and diesel-like hydrocarbons from triglycerides," *Energy Environ. Sci.*, **2**(2009)1258-1265.

References

- EIA. Energy Information Administration, Annual Energy Review 2008.
(www.eia.doe.gov).
- EIA Energy Information Administration (2013) energy outlook (Weatherdem's weblog).
- Erb A., Walker E., Flukiger R., "BaZrO₃: the solution for the crucible corrosion problem during the single crystal growth of high-Tc superconductors REBa₂Cu₃O₇; RE = Y," Pr. Physica. C., **245**(1995)245–251.
- European Environmental Agency (EEA). Greenhouse gas emission trends and projections in Europe 2004: progress by the EU and its Member States towards achieving their Kyoto Protocol targets. Report N85. Copenhagen, Denmark; 2004.
- Farag H.A., El-Maghraby A., Taha N.A., "Optimization of factors affecting esterification of mixed oil with high percentage of free fatty acid," Fuel Process. Technol., **92**(2011)507–510.
- Farooq M., Ramli A., Subbarao D., "Biodiesel production from waste cooking oil using bifunctional heterogeneous solid catalysts," J. Clean. Prod., **59**(2013)131–140.
- Farooq M., Ramli A., "Biodiesel production from low FFA waste cooking oil using heterogeneous catalyst derived from chicken bones," Renewable Energy, **76**(2015)362-368.
- Gabbott P., "Principles and applications of thermal analysis: New Delhi: Blackwell Pub", 2008.
- Georgogianni K.G., Katsoulidis A.P., Pomonis P.J., Kontominas M.G., "Transesterification of soybean frying oil to biodiesel using heterogeneous catalysts," Fuel Processing Technology, **90**(2009)671-676.
- Ghadge S.V., Raheman H., "Biodiesel production from mahua (*Madhuca indica*) oil having high free fatty acids," Biomass Bioenergy, **28**(2005)601–605.
- Ghaley A.E., Dave D., Brooks M.S., Budge S., "Production of Biodiesel by Enzymatic Transesterification: Review," American Journal of Biochemistry and Biotechnology, **6**(2010)54-76.

References

GOI (Government of India). National Policy on Biofuels. New Delhi, India: Ministry of New and Renewable Energy. (2009)18 pp.

Griffiths P.R., Haseth J.A.D., "Fourier transform infrared spectrometry: New Jersey, Canada: Wiley-Interscience," 2007.

Guan G., Kusakabe K., Sakurai N., Moriyama K., "Transesterification of vegetable oil to biodiesel fuel using acid catalysts in the presence of dimethyl ether," Fuel, **88**(2009)81–86.

Guarany C., Pelaió L., Araújo E., Yukimitu K., Moraes J., Eiras J., "Infrared studies of the monoclinic–tetragonal phase transition in Pb(Zr, Ti)O₃ ceramics," J. Phys. Condens. Matter, **15**(2003)4851–4857.

Gude V.G., Grant G.E., Patil P.D., Deng S., "Biodiesel production from low cost and renewable feedstock," Cent. Eur. J. Eng., (3),**4**(2013)595–605.

IEA, International Energy Agency "World Energy Outlook 2013".

Jeffrey C., Brinker G.W.S., "Sol–gel science: the physics and chemistry of sol–gelprocessing. New York: Academic Press Inc," 1990.

Jeon H., Kim D.J., Kim S.J., Kim J.H., "Synthesis of mesoporous MgO catalyst templated by a PDMS–PEO comb-like copolymer for biodiesel production," Fuel Process. Technol., **116**(2013)325–331.

Jitputti J., Kitiyanan B., Rangsunvigit P., Bunyakiat K., Attanatho L., Jenvanitpanjakul P., "Transesterification of crude palm kernel oil and crude coconut oil by different solid catalyst," Chem. Eng. J., **116**(2006)61–66.

Joshi G., Rawat D.S., Lamba B.Y., Bisht K.K., Kumar P., Kumar N., Kumar S., "Transesterification of Jatropha and Karanja oils by using waste egg shell derived calcium based mixed metal oxides," Energy Conversion and Management, **96**(2015)258–267.

Kamath H.V., Regupathi I., Saidutta M.B., "Optimization of two step Pongamia biodiesel synthesis under microwave irradiation," Fuel Process. Technol., **92**(2011)100–105.

References

Karavalakis G., Anastopoulos G., Karonis D., Stournas S., “Biodiesel production using tetramethyl and benzyl trimethyl ammonium hydroxides as strong base catalysts,” *Fuel Process. Technol.*, **91**(2010)1585–1590.

Karavalakis G., Anastopoulos G., Stournas S., “Tetramethyl guanidine as an efficient catalyst for transesterification of waste frying oils,” *Applied Energy*, **88**(2011)3645–3650.

Kaur M., Ali A., “Lithium ion impregnated calcium oxide as nanocatalyst for the biodiesel production from karanja and jatropha oils,” *Renew. Energy*, **36**(2011)2866–2871.

Kaur M., Ali A., “Lithium zirconate as solid catalyst for simultaneous esterification and transesterification of low quality triglycerides,” *Applied Catalysis A*, **489**(2015)193–202.

Kawashima A., Matsubara K., Honda K., “Acceleration of catalytic activity of calcium oxide for biodiesel production,” *Bioresour. Technol.*, **100**(2009)696–700.

Kazemian H., Turowec B., Siddiquee M.N., Rohani S., “Biodiesel production using cesium modified mesoporous ordered silica as heterogeneous base catalyst,” *Fuel*, **103**(2013)719–724.

Knothe G., “Analyzing biodiesel: standards and other methods,” *J. Am. Oil Chem. Soc.*, **83**(2006)823–833.

Kulkarni M.G., Gopinath R., Meher L.C., Dalai A.K., “Solid acid catalysed biodiesel production by simultaneous esterification and transesterification,” *Green Chemistry*, **8**(2006)1056–1062.

Laherrere J., *Forecasting production from discovery*. In: ASPO; 2005.

Lam M.K., Lee K.T., Mohamed A.R., “Homogeneous, heterogeneous and enzymatic catalysis for transesterification of high free fatty acid oil (waste frying oil) to biodiesel: a review,” *Biotechnol. Adv.*, **28**(2010)500–518.

Laosiripojana N., Kiatkittipong W., Sutthisripok W., Assabumrungrat S., “Synthesis of methyl esters from relevant palm products in near-critical methanol with modified-

References

- zirconia catalysts,” *Bioresource Technol.*, **101**(2010)8416–8423.
- Liaquat A., Kalam M., Masjuki H., Jayed M., “Potential emissions reduction in road transport sector using biofuel in developing countries,” *Atmos. Environ.*, **44**(2010)3869–3877.
- Licht F.O., “World Ethanol and Biofuels Report,” (10),**14** (2012)281-289.
- Lim B.P., Maniam G.P., Hamid S.A., “Biodiesel from adsorbed waste oil on spent bleaching clay using CaO as a heterogeneous catalyst,” *Eur. J. Sci. Res.*, **33**(2009)347–357.
- Lim P.C., Lim C.C., *Physics* (pp.103); SasbandiSdn.Bhd (2012).
- Lima J., Ghani Y., da Silva R., Batista F., Bini R., Varanda L. et al., “Strontium zirconate heterogeneous catalyst for biodiesel production: synthesis, characterization and catalytic activity evaluation,” *Applied Catalysis A*, **445–446**(2012)76–82.
- Lin L., Cunshan Z., Vittayapadung S., Xiangqian S., Mingdong D., “Opportunities and challenges for biodiesel fuel,” *Applied Energy*, (88),**4**(2011)1020–1031.
- Long T., Deng Y., Gan S., Chen J., “Application of choline chloride ZnCl₂ ionic liquids for preparation of biodiesel,” *Chin. J. Chem. Eng.*, **18**(2010)322–327.
- Ma F., Hanna M.A., “Biodiesel production: a review,” *Bioresour. Technol.*, **70**(1999)1–15.
- Madhu D., Chavan S.B., Singh V., Singh B., Sharma Y.C., “An economically viable synthesis of biodiesel from a crude *Millettia pinnata* oil of Jharkhand, India as feedstock and crab shell derived catalyst,” *Bioresource Technology*, **214**(2016)210–217.
- Madhuvilakku R., Mariappan R., Jeyapal S., Sundar S., Piraman S., “Transesterification of palm oil catalyzed by fresh water bivalve mollusc (*Margaritifera falcata*) shell as heterogeneous catalyst,” *Ind. Eng. Chem. Res.*, **52**(2013)17407–17413.
- Mata T.M., Martins A.A., Caetano N.S., “Microalgae for biodiesel production and other applications: a review,” *Renew. Sust. Energy Rev.*, **14**(2010)217–232.

References

Meher L.C., Vidya S.D., Naik S.N., “Technical aspects of biodiesel production by transesterification—a review,” *Renewable and Sustainable Energy Reviews*, **10**(2006)248–268.

Melero J.A., Bautista L.F., Morales G., Iglesias J., Sánchez-Vázquez R., “Biodiesel production from crude palm oil using sulfonic acid-modified mesostructured catalysts,” *Chem. Eng. J.*, **161**(2010)323–331.

Mercera P.D.L., Ommen J.G., Doesburg E.B.M., Burggraaf A.J., Ross J.R.H., “Zirconia as a support for catalysts influence of additives on the thermal stability of the porous texture of monoclinic zirconia,” *Applied Catal.*, **71**(1991)363–391.

Merchant research and consulting ltd. Biodiesel: 2014 World Market Outlook and Forecast up to 2018.

Miao X., Li R., Yao H., “Effective acid-catalysed transesterification for biodiesel production,” *Energy Convers. Manag.*, **50**(2009)2680–2684.

Mutreja V., Singh S., Ali A., “Potassium impregnated nanocrystalline mixed oxides of La and Mg as heterogeneous catalysts for transesterification,” *Renew. Energy*, **62**(2014)226–233.

Narkhede N., Patel A., “Biodiesel production by esterification of oleic acid and transesterification of Soybean oil using a new solid acid catalyst comprising 12-tungstosilicic acid and zeolite H β ,” *Ind. Eng. Chem. Res.*, **52**(2013)13637–13644.

Nayebzadeh H., Saghatoleslami N., Tabasizadeh M., “Optimization of the activity of KOH/calcium aluminate nanocatalyst for biodiesel production using response surface methodology,” *Journal of the Taiwan Institute of Chemical Engineers*, **68**(2016)379–338.

Nielsen, “All India Study on Sectoral Demand of Diesel & Petrol, Report Petroleum Planning and Analysis Cell, Ministry of Petroleum & Natural Gas, Government of India,” (2013).

Obadiah A., Swaroopa G.A., Kumar S.V., Jeganathan K.R., Ramasubbu A., “Biodiesel production from palm oil using calcined waste animal bone as catalyst,” *Bioresour. Technol.*, **116**(2012)512–516.

References

Omar W.N.N.W., Amin N.A.S., "Biodiesel production from waste cooking oil over alkaline modified zirconia catalyst," *Fuel Process. Technol.*, **92**(2011)2397–2405.

Paris summit 2015 Analysis: India's climate pledge suggests significant emissions growth up to 2013 (<http://www.carbonbrief.org/indias-indc>).

Park R.L., Lagally M. G., "Solid state physics: surfaces: London: Academic Press," 1985.

Patel A., Brahmkhatri V., Singh N., "Biodiesel production by esterification of free fatty acid over sulphated zirconia," *Renew. Energy*, **51**(2013)227–233.

Patil P.D., Deng S., "Transesterification of *Camelina sativa* oil using heterogeneous metal oxide catalysts," *Energy Fuel*, **23**(2009)4619–4624.

Pramanik K., "Properties and use of *Jatropha curcas* oil and diesel fuel blends in compression ignition engine," *Renew. Energy*, (28),**2**(2003)239–248.

Rahman M.S., Islam M.B., Rouf M.A., Jalil M.A., Haque M.Z., "Extraction of Alkaloids and Oil from *Karanja (Pongamia pinnata)* Seed," *J. Sci. Res.*, (3), **3**(2011)669-675.

Rajesh R., Hariharasubramanian A., Ravichandran Y.D., "Chicken bone as a bioresource for the bioceramic (hydroxyapatite)," *Phosphorus Sulfur Silicon Relat. Elem.*, **187**(2012)914–925.

Ramachandra T.V., Alakananda B., Supriya G., "Biofuel prospects of microalgal community in urban wetlands," *International Journal of Environmental Protection*, **1**(2011)54–61.

Rawat I., Kumar R.R., Mutanda T., Bux F., "Dual role of microalgae: phycoremediation of domestic wastewater and biomass production for sustainable biofuels production," *Applied Energy*, **88**(2011)3411–3424.

Report of the Working Group on Petroleum & Natural Gas Sector for the XI Plan (2007–2012). MoPNG; November 2006.

References

- Resende N.S., Nele M., Salim V.M.M., "Effects of anion substitution on the acid properties of hydroxyapatite," *Thermochim. Acta.*, **451**(2006)16–21.
- Sahoo P.K., Das L.M., "Process optimization for biodiesel production from Jatropha, Pongamia and Polanga oils," *Fuel*, **88**(2009)1588–1594.
- Samart C., Sreetongkittikul P., Sookman C., "Heterogeneous catalysis of transesterification of soybean oil using KI/mesoporous silica," *Fuel Process. Technol.*, **90**(2009)922–925.
- Sangwan S., Rao D.V., Sharma R.A., "A Review on Pongamia Pinnata (L.) Pierre: A Great Versatile Leguminous Plant," *Nature and Science*, (8),**11**(2010) 130-139.
- Saniger J.M., "Al-O infrared vibrational frequencies of γ -alumina," *Materials Letters*, **22**(1995)109-113.
- Sarkar D., Mohapatra D., Ray S., Bhattacharyya S., Adak S., Mitra N., "Synthesis and characterization of sol-gel derived ZrO₂ doped Al₂O₃ nanopowder," *Ceram. Int. J.*, (33),**7**(2006)1275–1282.
- Sharma Y.C., Singh B., "An ideal feedstock, kusum (*Schleichera triguga*) for preparation of biodiesel: optimization of parameters," *Fuel*, **89**(2010)1470–1474.
- Sharma Y.C., Singh B., "Development of biodiesel: current scenario," *Renew. Sustain. Energy Rev.*, **13**(2009)1646–1651.
- Sharma Y.C., Singh B., "Development of biodiesel from karanja, a tree found in rural India," *Fuel*, **87**(2008)1740–1742.
- Sharma Y.C., Singh B., Upadhyay S.N., "Advancements in development and characterization of biodiesel: a review," *Fuel*, **87**(2008)2355–2373.
- Shu Q., Gao J., Nawaz Z., Liao Y., Wang D., Wang J., "Synthesis of biodiesel from waste vegetable oil with large amounts of free fatty acids using a carbon-based solid acid catalyst," *Applied Energy*, **87**(2010)2589–2596.

References

Siler-Marinkovic S., Tomasevic A., "Transesterification of sunflower oil in situ," *Fuel*, (77),**12**(1998)1389–1392.

Silitonga A.S., Masjuki H.H., Mahlia T.M.I., Ong H.C., Chong W.T., "Experimental study on performance and exhaust emissions of a diesel engine fuelled with Ceiba pentandra biodiesel blends," *Energy Convers. Manage.*, **76**(2013)828–836.

Silva P.R.N., "Emprego de óxidos tipo perovskita nas oxidações do propano e co," *Quim Nova*, **27**(2004)35–41.

Singh S.P., Singh D., "Biodiesel production through the use of different sources and characterization of oils and their esters as the substitute of diesel: a review," *Renew. Sust. Energy Rev.*, **14**(2010)200–216.

Singh V., Bux F., Sharma Y.C., "A low cost one pot synthesis of biodiesel from waste frying oil (WFO) using a novel material, β -potassium dizirconate (β - $K_2Zr_2O_5$)," *Applied Energy*, **172**(2016)23–33.

Singh V., Hameed B.H., Sharma Y.C., "Economically viable production of biodiesel from a rural feedstock from eastern India, *P. pinnata* oil using a recyclable laboratory synthesized heterogeneous catalyst," *Energy Conversion and Management*, **122**(2016)52–62.

Sobczak A., Kowalski Z., Wzorek Z., "Preparation of hydroxyapatite from animal Bones," *Acta. Bioeng. Biomech.*, **11**(2009)23–28.

Source: Dept of Land Resources, Govt of India.

Sumathi S., Chai S.P., Mohamed A.R., "Utilization of oil palm as a source of renewable energy in Malaysia," *Renew. Sust. Energy Rev.*, **12**(2008)2404–2421.

Sun H., Ding Y., Duan J., Zhang Q., Wang Z., Lou H. et al., "Transesterification of sunflower oil to biodiesel on ZrO_2 supported La_2O_3 catalyst," *Bioresour. Technol.*, **101**(2010)953–958.

Suppes J.G., Dasari M.A., Doskocil E.J., Mankidy P.J., Goff M.J., "Transesterification of soybean oil with zeolite and metal catalyst," *Applied Catalysis A: General*,

References

257(2004)213-223.

Syazwani O.N., Rashid U., Yap Y.H.T., “Low-cost solid catalyst derived from waste *Cyrtopleura costata* (Angel Wing Shell) for biodiesel production using microalgae oil,” *Energy Convers. Manage.*, **101**(2015)749–756.

Taglieri G., Tersigni M., Villa P.L., Mondelli C., “Synthesis by the citrate route and characterisation of BaZrO₃, a high tech ceramic oxide: preliminary results,” *Int. J. Inorg. Mater.*, **1**(1999)103–110.

Taguchi A., Schutch F., “Ordered mesoporous materials in catalysis,” *Microporous Mesoporous Mater.*, **77**(2005)1–45.

Tariq M., Ali S., Ahmad F., Ahmad M., Zafar M., Khalid N. et al., “A identification, FTIR, NMR (¹H and ¹³C) and GC/MS studies of fatty acid methyl esters in biodiesel from rocket seed oil,” *Fuel Process. Technol.*, **92**(2011)336–341.

Tarte P., “Infra-red spectra of inorganic aluminates and characteristic vibrational frequencies of AlO₄ tetrahedra and AlO₆ octahedral,” *Spectrochimi. Acta.*, **23A**(1967)2127-2143.

TERI (The Energy and Resources Institute) energy data directory and yearbook 2006-07. New Delhi, India: TERI. (2006)527 pp.

TERI Policy Brief, “Biofuel Promotion in India for Transport: Exploring the Grey Areas,” (2015).

The world factbook, 2014 (<https://www.cia.gov/library/publications/the-world-factbook/>).

Tonetto G.M., Marchetti J.M., “Transesterification of soybean oil over Me/Al₂O₃ (Me^{1/4}Na, Ba, Ca, and K) catalysts and monolith K/Al₂O₃-cordierite,” *Top. Catal.*, **53**(2010)755–762.

USEIA, International Energy Outlook 2011 U.S. Energy Information Administration, International Energy Outlook 2011 (IEO2011).

Vassen R., Cao X., Tietz F., Basu D., Stover D., “Zirconates as new materials for thermal barrier coatings,” *J. Am. Ceram. Soc.*, **83**(2000)2023–2028.

References

- Verma P., Sharma M.P., “Comparative analysis of effect of methanol and ethanol on Karanja biodiesel production and its optimisation,” *Fuel*, **180**(2016)164–174.
- Viola E., Blasi A., Valerio V., Guidi I., Zimbardi F., Braccio G. et al., “Biodiesel from fried vegetable oils via transesterification by heterogeneous catalysis,” *Catalysis Today*, **179**(2012)185–190.
- Viriya-Empikul N., Krasae P., Nualpaeng W., Yoosuk B., Faungnawakij K., “Biodiesel production over Ca-based solid catalysts derived from industrial wastes,” *Fuel*, (92),**1**(2012)239–244.
- Viviani M., Buscaglia M.T., Buscaglia V., Leoni M., Nanni P., “Barium perovskites as humidity sensing materials,” *J. Eur. Ceram. Soc.*, **21**(2001)1981–1984.
- Wang J., Chen K., Chen C., “Biodiesel production from soybean oil catalyzed by K_2SiO_3/C ,” *Chin. J. Catal.*, **32**(2011)1592–1596.
- Wang S-H., Wang Y-B., Dai Y-M., Jehng J-M., “Preparation and characterization of hydrotalcite like compounds containing transition metal as a solid base catalyst for the transesterification,” *Applied Catalysis A: General*, **439-440**(2012)135–141.
- Wang Y., Huang W.Y., Wu Z., Chun Y., Zhu J.H., “Superbase derived from zirconia supported potassium nitrate,” *Mater. Lett.*, **46**(2000)198–204.
- Witoon T., “Characterization of calcium oxide derived from waste eggshell and its application as CO_2 sorbent,” *Ceramics International*, (37),**8**(2011)3291-3298.
- World Energy Outlook 2007, Published by the International Energy Agency (IEA).
- Xia A., Jin C., Du D., Sun Y., Tong L., “Effects of impurity Na^+ ions on the structural and magnetic properties of Ni–Zn–Cu ferrite powders: an improvement for chemical coprecipitation method,” *J. Magn. Mater.*, **323**(2011)2080–2082.
- Xie W., Li H., “Alumina-supported potassium iodide as a heterogeneous catalyst for biodiesel production from soybean oil,” *J. Mol. Catal. A: Chem.*, **255**(2006)1–9.

References

- Xie W., Peng H., Chen L., "Calcined Mg–Al hydrotalcites as solid base catalysts for methanolysis of soybean oil," *J. Mol. Catal. A: Chem.*, **246**(2006)24–32.
- Xie W., Yang D., "Transesterification of soybean oil over WO₃ supported on AlPO₄ as a solid acid catalyst," *Bioresour. Technol.*, **119**(2012)60–65.
- Xie W., Zhao L., "Heterogeneous CaO–MoO₃-SBA-15 catalysts for biodiesel production from soybean oil," *Energy Convers. Manage.*, **79**(2014)34–42.
- Xu G., Aksay I.A., Groves J.T., "Continuous crystalline carbonate apatite thin film. A biomimetic approach," *J. Am. Chem. Soc.*, **123**(2001)2196–2203.
- Yan S., Kim M., Salley S.O., Ng K.Y.S., "Oil transesterification over calcium oxides modified with lanthanum," *Applied Catalysis A*, **360**(2009)163–170.
- Yao J., Ji L., Sun P., Zhang L., Xu N., "Low boiling point or ganicamine- catalysed transesterification of cotton seed oil to biodiesel with trace amount of KOH as co-catalyst," *Fuel*, **89**(2010)3871–3875.
- Yuan W., Hansen A.C., Zhang Q., "Vapour pressure and normal boiling point predictions for pure methyl esters and biodiesel fuels," *Fuel*, **84**(2005)943–950.
- Zhang Y., Wong W-T., Yung K-F., "Biodiesel production via esterification of oleic acid catalysed by chlorosulfonic acid modified zirconia," *Applied Energy*, **116**(2014)191–198.

**LIST OF
PUBLICATIONS
AND
CONFERENCES**

List of Publications

1. **Veena Singh**, Faizal Bux, Yogesh Chandra Sharma, “A low cost one pot synthesis of biodiesel from waste frying oil (WFO) using a novel material, β -potassium dizirconate (β -K₂Zr₂O₅),” *Applied Energy* 172(2016)23-33 [Impact Factor 5.7].
2. Yogesh Chandra Sharma, **Veena Singh**, “Microalgal biodiesel: A possible solution for India's energy security,” *Renewable and sustainable energy review* 67(2016)72-88 [Impact Factor 6.8].
3. **Veena Singh**, Bassim H. Hameed, Yogesh Chandra Sharma, “Economically viable production of biodiesel from a rural feedstock from eastern India, *P. pinnata* oil using a recyclable laboratory synthesized heterogeneous catalyst,” *Energy conversion and management* 122(2016)52-62 [Impact factor 4.8].
4. Devarapaga Madhu, Supriya B. Chavan, **Veena Singh**, Bhaskar Singh, Yogesh C. Sharma, “An economically viable synthesis of biodiesel from a crude *Millettia pinnata* oil of Jharkhand, India as feedstock and crab shell derived catalyst,” *Bioresource technology* 214(2016)210-217 [Impact factor 4.9].
5. **Veena Singh**, Yogesh Chandra Sharma, “Low cost guinea fowl bone derived recyclable heterogeneous catalyst for microwave assisted transesterification of *Annona Squamosa* L seed oil,” *Energy conversion and management* 138(2017)627-637 [Impact factor 5.5].
6. **Veena Singh**, Meena Yadav, Yogesh Chandra Sharma, “Effect of co-solvent for biodiesel production via transesterification of waste vegetable oil in presence of calcium aluminate as a heterogeneous catalyst,” *Fuel* 203(2017)360-369 [Impact factor 4.6].

7. Devarapaga Madhu, Rajan Arora, Shalini Sahani, **Veena Singh**, Yogesh Chandra Sharma, "Synthesis of high quality biodiesel using feedstock and catalyst derived from fish wastes," *Journal of Agricultural and Food Chemistry* 65(2017)2100-2109 [Impact factor 2.9].
8. Supriya B. Chavan, Meena Yadav, Reena Singh, **Veena Singh**, Rajendra R Kumbhar, Yogesh Chandra Sharma, "Application of three indigenous crops for biodiesel production: optimization of process parameters and assessment of various fuel properties," *Environmental progress and sustainable energy* 36(2017)788-795 [Impact factor 1.6].
9. Meena Yadav, **Veena Singh**, Yogesh Chandra Sharma; Potassium impregnated zinc oxide as a heterogeneous catalyst for one pot transesterification of low FFA waste cooking oil, optimization and homogeneity study of catalyst, *Energy conversion and management* (accepted 2017) [Impact factor 5.5].
10. **Veena Singh**, Siddh Nath Upadhyay, Yogesh Chandra Sharma; Effect of Blending of Diesel with Biodiesel on Performance and Emissions of IC Engines Using Biodiesel Blended Fuel, *Renewable energy* (Under review) [Impact factor 4.4].

List of Conference Presentations

Oral presentations

1. **Veena Singh**, Yogesh Chandra Sharma; International Conference on Materials Science & Technology (ICMTech 2016), University of Delhi, Delhi, March 1–4, 2016.
2. **Veena Singh**, Yogesh Chandra Sharma; Second International Conference on Advanced Materials for Power Engineering (ICAMPE-2016), Mahatma Gandhi University, Kottayam, Kerala, November 11-13, 2016 [**3rd prize**].

Poster presentations

1. **Veena Singh**, Yogesh Chandra Sharma; International conference on Recent Advances in Analytical Sciences (RAAS 2014), Indian institute of technology (Banaras Hindu University), Varanasi, March 27-29, 2014.
2. **Veena Singh**, Devarapaga Madhu, Yogesh Chandra Sharma; National Conference on Nanomaterials & Sustainable Synthetic Strategies, Department of Chemistry, Banaras Hindu University, Varanasi, March 21-22, 2015.
3. **Veena Singh**, Yogesh Chandra Sharma; International conference on Multifunctional materials for Future Applications (*ICMFA-2015*), Indian institute of technology (Banaras Hindu University), Varanasi, Oct.27 – 29, 2015.
4. **Veena Singh**, Meena Yadav, Yogesh Chandra Sharma; International conference on Recent Advances in Analytical Sciences (RAAS 2016), Indian institute of technology (Banaras Hindu University), Varanasi, April 7-9, 2016.
5. **Veena Singh**, Yogesh Chandra Sharma; 20th CRSI-RSC National Symposium in Chemistry, Gauhati University, Guwahati, Assam, February 2-4, 2017.

Training and Workshops

1. Author workshop, Organised by Springer and IIT BHU, 10th February 2014
2. Hands on Training Programme on C and MATLAB, Organised by DST centre for Interdisciplinary Mathematical Sciences (CIMS) BHU Varanasi, 27th January to 02nd February 2015
3. Training for UV-VIS spectrophotometer, Organised by TOSHVIN ANALYTICAL PVT. LTD., 4th February 2015
4. Author workshop, Organised by Springer and IIT BHU, 7th October 2016