Synthesized Platform of Biodiesel and Biochemicals

Penjit SRINOPHAKUN *

Chemical Engineering Department, Engineering Faculty,
Kasetsart University, Bangkok, 10900, Thailand
Email: fengpjs@ku.ac.th

Biodiesel is the alternative energy and produced from vegetable oil or animal fat or used cooking oil and alcohol at the presence of base, acid or lipase catalysts. Raw materials of commercial biodiesel are palm, sunflower and soybean oils. However, non-edible oil has been investigated to avoid Food-Feed-Fuel dilemma such as *Jatropha curcas*, Pongamia, algae, microbes etc. Other sources of non-edible oils are also explored such as acid oil from the purification process of glycerol and from wastewater treatment system. Nevertheless, zero wastes approach has been applied for the biodiesel process and glycerol is purified and used as raw material to produce other chemicals for example propene glycol, polyurethane, poly-sulfonate etc. With this synthesized platform, it makes biodiesel production a green process of green energy and biochemicals.

Penjit Srinophakun

Associate Professor
Chemical Engineering, Engineering Faculty
Kasetsart University, Thailand.

Photo here

Education:

PhD, 1996 Queensland University, Australia.

Professional Career:

2011-2016 President of Thai Society for Biotechnology (TSB)
2017-present Vice President of Thai Society for Biotechnology (TSB)
2016 Chair- person of Bioservice Hub, Thailand
2005-present Director, KU-biodiesel project, Kasetsart University, Thailand
2011-present Vice President of Asian Federation of Biotechnology (AFOB)
2011-present Director of Centre of Excellence for Jatropha, Kasetsart University, Thailand

2016-2017 Coordinator of Advanced Biofuels, Energy Policy and Planning Office, Ministry of Energy, Thailand

2017-present Coordinator of Advanced Biofuels and Smart Farm, Energy Policy and Planning Office, Ministry of Energy, Thailand

Research Interests:

Lignocellulosic Fuel and Chemicals Production

Biochemical Engineering

Synthetic Engineering

Selected publications

1 Pongthep Ariyajaroenwong, Pattana Laopaiboon, Apilak Salakkam, Penjit Srinophakun and Lakkana Laopaiboon (2016), Kinetic models for batch and continuous ethanol fermentation from sweet sorghum juice by yeast immobilized on sweet sorghum stalks, Journal of the Taiwan Institute of Chemical Engineers, 66: 210-216.

2 Maythee Saisriyoot, Thanyarath Sahaya, Anusith Thanapimmetha, Yusuf Chisti and Penjit Srinophakun (2016), Production of potential fuel oils by *Rhodococcus opacus* grown on petroleum processing wastewaters, Journal of Renewable and Sustainable Energy, 8: 063106-1-10.

3 Potjanee Saeong, Maythee Saisriyoot, Anusith Thanapimmetha and Penjit Srinophakun (2017), The response surface optimization of steryl glucosides removal in palm biodiesel using silica adsorption, Fuel, 191: 1-9.

4 Penjit Srinophakun, Anusith Thanapimmetha, Kledkaew Rattanaphanyapan, Thanyarath Sahaya and Maythee Saisriyoot (2017), Feedstock production for third generation biofuels through cultivation of *Arthrobacter* AK19 under stress conditions, Journal of Cleaner Production, 142: 1259-1266.

5 Sinsupa Chuichulcherm, Nathathai Kasichan, Penjit Srinophakun, Maythee Srisaiyoot and Anusith Thanapimmetha (2017), The use of ozone in a continuous cyclical swing mode regeneration of Fe-EDTA for a clean biogas process from a swine farm waste, Journal of Cleaner Production, 142: 1267-1273.

6 Wadwan Singhapong, Penjit Srinophakun and Angkhana Jaroenworaluck (2017), Influence of pore characteristics on the properties of porous mullite ceramics, Journal of Australian Ceramic Society, 53(2): 811-820.

7 Penjit Srinophakun, Anusith Thanapimmetha, Sansaporn Plangsri, Sutamart Vetchayakunchai and Maythee Saisriyoot (2017), Application of modified chitosan membrane for microbial fuel cell: roles of proton carrier site and positive charge, Journal of Cleaner Production, 142: 1274-1282.

8 Anusith Thanapimmetha, Tharatron Suwaleerat, Maythee Saisriyoot, Yusuf Chisti and Penjit Srinophakun (2017), Production of carotenoids and lipids by *Rhodococcus opacus* PD630 in batch and fed-batch culture, Bioprocess Biosyst Eng, 40: 133-143.

9 Tharatorn Suwaleerat, Anusith Thanapimmetha, Maythee Saisriyoot, Yusuf Chisti and Penjit Srinophakun (2018), Enhanced production of carotenoids and lipids by *Rhodococcus opacus* PD630, Journal Chem. Technol Biotech, on-line on 20 February 2018, 93: 2160-2169.

10 Kewalee Inna, Jackapon Sunthornvarabhas, Anusith Thanapimmetha, Maythee Saisriyoot and Penjit Srinophakun (2018), Natural antimicrobial lignin in polyvinyl alcohol and polyvinylpyrrolidone film for packaging application, Materials Science Forum, 936: 105-109.

11 Dussadee Rattanaphra, Phansiri Soodjit, Anusith Thanapimmetha, Maythee Saisriyoot and Penjit Srinophakun (2019), Synthesis, characterization and catalytic activity studies of lanthanum oxide from Thai monazite ore for biodiesel production, Renewable Energy, 131: 1128-1137.

12 Natchanok Pangsang, Udomsin Rattanapan, Anusith Thanapimmetha, Penjit Srinophakun, Chen-Guang Liu, Xin-Qing Zhao, Feng-Wu Bai and Chularat Sakdaronnarong (2019), Chemical-free fractionation of palm empty fruite bunch and palm fiber by hot-compressed water technique for ethanol production, Energy Reports, 5:337-348.

13 Wadwan Singhapong, Angkhana Jaroenworaluck, Raweewan Pansri, Watchara Chokevivat, Panlekha Manpetch, Masahiro Miyauchi and Penjit Srinophakun (2019), Mullite membrane coatings: antibacterial activities of nanosized TiO2 and Cu-grated TiO2 in the presence of visible light illumination, Applied Physics A, 125-244.

14 Saisriyoot M, Thanapimmetha A, Suwaleerat T, Chisti Y, Srinophakun P*,* 2019, Biomass and lipid production by Rhodococcus opacus PD630 in molasses-based media with and without osmotic-stress, Journal of Biotechnology*,* 297:1-8.

15 Chen-Guang Lin, Yi Xiao, Xiao-Xia Xia, Xin-Qing Zhao, Liangcai-Peng, Penjit Srinophakun and Fengwu Bai (2019) Cellulosic ethanol production: progress, challenges and strategies for solutions, Biotechnology Advances, 37: 491-504.