Dr. Jo-Shu Chang

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Educational Qualifications

- Ph.D. in Chemical/Biochemical Engineering (1993) University of California, Irvine, CA, USA
- M.S. in Chemical Engineering (1987) University of Colorado, Boulder, CO, USA
- B.S. in Chemical Engineering (1983) Tunghai University, Taiwan

Professional Experiences and Services

- Dean, College of Engineering, Tunghai University, Taiwan (Since August 1, 2019)
- Chair Professor, Department of Chemical and Materials Engineering, Tunghai University, Taiwan (Since August 1, 2019)
- Director, Research Center for Circular Economy, National Cheng Kung University, Taiwan (January, 2018-July 2019)
- Honorable Chair Professor, Tunghai University, Taiwan (Since 2018)
- University Chair Professor, National Cheng Kung University, Taiwan (Since January, 2016)
- Deputy Director. Research Center for Energy Technology and Strategy, National Cheng Kung University, Taiwan (Since February, 2016 to July 2019)
- Deputy Director, Center for Bioscience and Biotechnology, National Cheng Kung University, Taiwan (May, 2009 to Jan. 2015)
- Adjunct Researcher, Metal Industries Research & Development Center (Since 2017)
- Visiting Professor, Kobe University, Japan (2016)
- Adjunct Professor, Harbin Institute of Technology, China (Since 2012)
- Adjunct Professor, Chongqing University, China (Since 2015)
- Distinguished Professor, National Cheng Kung University, Taiwan (Since August, 2006)
- Professor, National Cheng Kung University, Dept. of Chemical Engineering (Since Aug. 2001)
- Professor, Feng Chia University, Dept. of Chemical Engineering, Taiwan (1998 to 2001)
- Associate Professor, Feng Chia University, Dept. of Chemical Engineering, Taiwan (1993 to 1998)
- Executive Board, Taiwan Sustainable Environment/Eco-energy Development Society (Since 2011)
- Member of Executive committee, Asian Federation of Biotechnology (AFOB) (2016.10-2020.9)
- Member of Executive committee, Biochemical Engineering Society, Taiwan (2016.7-2019.8)
- Member of Executive committee, Taiwan Society of Biomass Energy (Since 2016\)
- Member of Steering Committee APEC (Asia-Pacific Economic Cooperation) Research Network for Advanced Biohydrogen Technology (Since February 2010)
- Advisory Board member of OMEGA Global Initiative (OGI) (www.omegaglobal.org) (Since 2017)

Journal Editorial Services

- Editor, *Journal of Bioscience and Bioengineering* (Elsevier; IF=2.240) (Since 2011)
- Editor, *BMC Energy* (Springer Nature) (Since 2018)
- Associate Editor, *Bioresource Technology* (Elsevier; IF= 6.669) (Since 2016)
- Associate Editor, *Biochemical Engineering Journal* (Elsevier; IF=3.226) (Since 2014)
- Associate Editor, *Biotechnology for Biofuels* (Springer Nature; IF= 6.444) (Since 2015)
- Guest Editor, *Journal of the Taiwan Institute of Chemical Engineers* (IF= 4.217) (2016- 2017)
- Guest Editor, *Bioresource Technology* (Elsevier; IF= 6.669) (2011, 2012, and 2014)
- Guest Editor, *Biotechnology Journal* (Wiley; IF=3.781) (2015)
- Guest Editor, *Applied Energy* (Elsevier; IF= 8.426) (2011-2012)
- Guest Editor, *Biochemical Engineering Journal* (Elsevier; IF=3.226) (2012)
- Guest Editor, *International Journal of Hydrogen Energy* (Elsevier; IF=4.229) (2006)
- Editorial Board, *Bioresource Technology* (Elsevier; IF= 5.807) (Since 2011)
- Editorial Board, *Enzyme and Microbial Technology* (Elsevier; IF= 2.932) (Since 2007)
- Editorial Board, *Biotechnology Journal* (Wiley; IF=3.781) (Since 2012)
- Editorial Board, *Journal Taiwan Inst. Chemical Engineers* (Elsevier; IF= 4.217) (Since July, 2006)
- Editorial Board, *Journal of Environmental Science and Health, Part A* (IF=1.561) (Since 2015)
- Editorial Board, *Green and Sustainable Chemistry* (IF=0.640) (Since 2011)

Research Interests

Biochemical Engineering, Biomass Energy and Biofuels, Biorefinery, Microalgae Biotechnology and Engineering, Environmental Biotechnology, Applied Microbiology

Honors and Awards

- 2019 Highly Cited Scholar of Web of Science Group (Cross-Field) (WOS 高被引學者) (2019)
- Honorable Chair Professor, Tunghai University, Taiwan (Since 2018)
- Fellow, International Bioprocessing Association (IBA) (2018)
- University Chair Professor, National Cheng Kung University (Since August, 2015)
- Fellow, American Institute of Medical and Biological Engineers (AIMBE) (2015)
- Distinguished Research Award, National Science Council/Ministry of Science & Technology, Taiwan (科技部傑出獎) (2008, 2012, 2015)
- Distinguished Professor, National Cheng Kung University (Since Aug 2006)
- Biotechnology/Biochemical Engineering Medal Award (生物技術與生化工程獎章) issued by Society of Biotechnology and Biochemical Engineering, Taiwan (June, 2017)
- 2016 TECO Award (東元獎) (2016)
- Mr. Kai-Ying Jin Award (金開英獎), Taiwan Institute of Chemical Engineers (2016)
- Y.Z. Hsu Chair Professor (有庠科技講座) (2015)
- K.T. Li Honor Scholar Award (李國鼎榮譽學者) (2015)
- J.D. Ho Distinguished Honor Award (侯金堆傑出榮譽獎) (2015)
- Distinguished Engineering Professor Award, Chinese Society of Engineering (中國工程師學會傑出工程教授獎) (2015)
- Startups Potential Award, Taiwan's MOST Innovation & Startups Program (FITI) (2015, 2016)
- Prof. Y-P Shi Paper Award (石延平教授論文獎), Taiwan Inst. of Chemical Engineers (2008)

- Professor J-D Lai Research Award (賴再得教授研究獎), Taiwan Inst. of Chemical Engineers (2007)
- Outstanding Scientist Award of the International Forum on Industrial Bioprocesses (2014)
- Gold medal award, 17th Moscow International Salon of Inventions and Innovation Technologies (Archimedes) (2014)
- INVENTO Prague 2013 Award (Modular quick extract separation method and device) (2013)
- ASE Group Outstanding Research Professor Award (2012)
- Outstanding Paper Award, Taiwan Institute of Chemical Engineers (2010)
- Excellent Chemical Engineering Paper Award, Taiwan Institute of Chemical Engineers (2008)
- Excellent Research Progress Award, National Cheng Kung University (2007)

Publications Summary

- Nearly 470 refereed SCI-indexed journal papers (including 15 ISI Hi-Ci papers and 1 hot paper)
- Total citation (Web of Science): 18,960 times (average 40 times per each paper)
- Total citation (Google Scholar): 27,952 times
- h-index (Web of Science) = 71
- h-index (Google Scholar) = 85
- 40+ patents; 10+ Technical Transfers
- Published papers in high impact factor or high ranking journals, such as *Energy and Environmental Science* (IF=30.067.; top 1%), *Biotechnology Advances* (IF=11.452; top 4%), *Renewable & Sustainable Energy Reviews* (IF=9.184; top 5%); *Current Opinion in Biotechnology* (IF=8.380; top 5%*); Green Chemistry* (IF=8.586; top 10%); *Applied Energy* (IF= 7.900; top 5%), *Water Research* (IF=7.051; top 1%); *Chemical Engineering Journal* (IF= 6.735; top 10%); *Journal of Hazardous Materials* (6.434 top 2%), Bioresource Tech*nology* (IF=6.669; top 8%)

Research Funding

Received national, industrial, and international grants with a total budget of over 10 million USD in the past 10 years including Taiwan's National Energy Program (NEP I & II, 2009-2018)

Publications

1. Robby Manrique, Wei Wu, Jo-Shu Chang (2019) A molecular dynamics study on the CO_2 permeability of microalgae lipid membrane. **Journal of Applied Phycology** (accepted on Sep. 18, 2019) [SCI; IF=2.635]
2. Aristotle Ubando, Wei-Hsin Chen, Jo-Shu Chang (2019) Iron oxide reduction by torrefied microalgae for CO2 capture and abatement in chemical-looping combustion. **Energy** (accepted on August 5, 2019) [SCI; IF= 5.537]
3. Wei-Chuan Chen; Yin-Che Hsu; Jo-Shu Chang; Shih-Hsin Ho; Li-Fen Wang; Yu-Hong Wei (2019) Enhancing production of lutein by a mixotrophic cultivation system using microalga Scenedesmus obliquus CWL-1. **Bioresource Technology** (accepted on July 22, 2019) [SCI; IF= 5.807].
4. Hui Yi Leong, Chih-Kai Chang, Jun Wei Lim, Pau Loke Show, Dong-Qiang Lin, Jo-Shu Chang* (2019) Perspective of Liquid Biphasic Systems for Oil-Rich Algae Bioproducts Processing. **Sustainability** (accepted on July 16, 2019) [SCI; IF= 2.592]
5. Jih-Heng Chen; Yuichi Kato; Mami Matsuda; Chun-Yen Chen; Dillirani Nagarajan; Tomohisa Hasunuma; Akihiko Kondo; Cheng-Di Dong; Duu-Jong Lee; Jo-Shu Chang* (2019) A novel

process for the mixotrophic production of lutein with Chlorella sorokiniana MB-1-M12 using aquaculture wastewater. **Bioresource Technology** (accepted on July 9, 2019) [SCI; IF= 5.807].

6. Dillirani Nagarajan; Duu-Jong Lee; Jo-Shu Chang* (2019) Integration of anaerobic digestion and microalgal cultivation for digestate bioremediation and biogas upgrading. **Bioresource Technology** (accepted on July 11, 2019) [SCI; IF= 5.807].
7. Kuan-Yeow Show; Yuegen Yan; Chunxiang Zong; Na Guo; Jo-Shu Chang; Duu-Jong Lee (2019) State of the Art and Challenges of Biohydrogen from Microalgae. **Bioresource Technology** (accepted on July 3, 2019) [SCI; IF= 5.807].
8. Dillirani Nagarajan; Adi Kusmayadi; Hong-Wei Yen; Cheng-Di Dong; Duu-Jong Lee; Jo-Shu Chang* (2019) Current advances in biological swine wastewater treatment using microalgae-based processes. **Bioresource Technology** (accepted on June 26, 2019)
9. K Rambabu, Pau-Loke Show, G Bharath, Fawzi Banat, Mu. Naushad, Jo-Shu Chang* (2019) Enhanced biohydrogen production from date seeds by *Clostridium thermocellum* ATCC 27405. **International Journal of Hydrogen Energy** (accepted on June 22, 2019) [SCI; IF= 3.582]
10. Yu-Cheng Lai; Chien-Hsiang Chang; Chun-Yen Chen; Jo-Shu Chang; I-Son Ng (2019) Towards protein production and application by using Chlorella species as circular economy. **Bioresource Technology** (accepted on June 7, 2019) [SCI; IF= 5.807]
11. Wei Wu, Yi-Chun Lei, and Jo-Shu Chang* (2019) Life cycle assessment of upgraded microalgae-to-biofuel chains. **Bioresource Technology** (accepted on May 14, 2019) [SCI; IF= 5.807]
12. Yu-Cheng Lai; Chien-Hsiang Chang; Chun-Yen Chen; Jo-Shu Chang; I-Son Ng (2019) Towards protein production and application by using Chlorella species as circular economy. **Bioresource Technology** (accepted) [SCI; IF= 5.807]
13. Yoong Kit Leong, Pau-Loke Show, John Chi-Wei Lan, Rambabu Krishnamoorthy, Dinh-Toi Chu, Dillirani Nagarajan, Hong-Wei Yen, Jo-Shu Chang* (2019) Application of thermo-separating aqueous two-phase system in extractive bioconversion of polyhydroxyalkanoates by *Cupriavidus necator* H16. **Bioresource Technology** (accepted on May 10, 2019) [SCI; IF= 5.807]
14. Bo Chuan Huang, Ying-Chen Yi, Jo-Shu Chang, and I-Son Ng (2019) Mechanism study of photo-induced gold nanoparticles formation by Shewanella oneidensis MR-1. **Scientific Reports** (accepted on May 9, 2019) [SCI; IF= 5.228]
15. Guo Yong Yew, Sze Ying Lee, Pau Loke Show, Yang Tao, Chung Lim Law, Thi Trung Chinh Nguyen, Jo-Shu Chang* (2019) Recent advances in algae biodiesel production: from upstream cultivation to downstream processing. **Bioresource Technology Reports** (accepted on May 8, 2019)
16. Shuo Li, Heshan Zheng, Yongjie Zheng, Jingzhi Tian, Tao Jing, Jo-Shu Chang, Shih-Hsin Ho*, (2019) Recent advances in hydrogen production by thermo-catalytic conversion of biomass, **International Journal of Hydrogen Energy** (In Press, Corrected Proof) [SCI; IF= 3.582]
17. Charles Felix, Aristotle Ubando, Cynthia Madrazo, Ivan Henderson Gue, Sylviana Sutanto, Phuong Lan Tran-Nguyen, Alchris Woo Go, Yi-Hsu Ju, Alvin Culaba, Jo-Shu Chang, and Wei-Hsin Chen (2019) Non-catalytic *in-situ* (trans) esterification of lipids in wet microalgae *Chlorella vulgaris* under subcritical conditions for the synthesis of fatty acid methyl esters. **Applied Energy** (accepted on April 22, 2019) [SCI; IF= 7.900]
18. Sze Yin Cheng, Pau-Loke Show, Beng Fye Lau, Jo-Shu Chang, Tau Chuan Ling (2019) New prospects for modified algae in heavy metal adsorption. **Trends in Biotechnology** (accepted on April 18, 2019) [SCI; IF= 13.578]

19. Dillirani Nagarajan, Duu-Jong Lee, Jo-Shu Chang* (2019) Recent insights into consolidated bioprocessing for lignocellulosic biohydrogen production. **International Journal of Hydrogen Energy** (In Press, Corrected Proof) [SCI; IF= 3.582]
20. Chung Hong Tan, Pau-Loke Show*, Tau Chuan Ling, Dillirani Nagarajan, Duu-Jong Lee, Wei-Hsin Chen, Jo-Shu Chang (2019) Exploring the potency of integrating semi-batch operation into lipid yield performance of Chlamydomonas sp. Tai-03. **Bioresource Technology** (In Press, Corrected Proof) [SCI; IF= 5.807].
21. Rijuta Ganesh Saratale, Ganesh Dattatraya Saratale, Si-Kyung Cho, Gajanan Ghodake, Avinash Kadam, Sunil Kumar, Sikandar I. Mulla, Dong-Su Kim, Byong-Hun Jeon, Jo Shu Chang, and Han-Seung Shin (2019) **Journal of the Taiwan Institute of Chemical Engineers** (accepted on March 08, 2019) [SCI; IF= 4.217]
22. Yuichi Kato; Yusuke Fujihara; Christopher J Vavricka; Jo-Shu Chang;Tomohisa Hasunuma; Akihiko Kondo (2019) Light/dark cycling causes delayed lipid accumulation and increased photoperiod-based biomass yield by altering metabolic flux in oleaginous Chlamydomonas sp. **Biotechnology for Biofuels** 12:39 [SCI; IF= 5.203]
23. Jester N. Itliong, Al Rey C. Villagracia, Joaquin Lorenzo V. Moreno, Kurt Irvin M. Rojas, Gian Paolo O. Bernardo, Melanie Y. David, Robby B. Manrique, Aristotle T. Ubando, Alvin B. Culaba, Allan Abraham B. Padama, Hui Lin Ong, Jo-Shu Chang, Wei-Hsin Chen, Hideaki Kasai, Nelson B. Arboleda Jr. (2019) Investigation of reverse ionic diffusion in forward-osmosis-aided dewatering of microalgae: A molecular dynamics study. **Bioresource Technology** 279:181-188 [SCI; IF= 5.807].
24. Jih-Heng Chen, Chun-Yen Chen, Tomohisa Hasunuma, Akihiko Kondo, Chien-Hsiang Chang, I-Son Ng, Jo-Shu Chang* (2019-April) Enhancing lutein production with mixotrophic cultivation of Chlorella sorokiniana MB-1-M12 using different bioprocess operation strategies. **Bioresource Technology** 278: 17-25 [SCI; IF= 5.807]
25. Renli Yin; Wanqian Guo; Huazhe Wang; Juanshan Du; Qinglian Wu; Jo-Shu Chang*; NanqiRen (2019- February) Singlet oxygen-dominated peroxydisulfate activation by sludge-derived biochar for sulfamethoxazole degradation through a nonradical oxidation pathway: Performance and mechanism. **Chemical Engineering Journal** 357:589-599. [SCI; IF= 6.216]
26. Hui-Yi Leong; Chien-An Su; Bo-Sheng Lee; John Chi-Wei Lan; Chung-Lim Law; Jo-Shu Chang; Pau-Loke Show(2019-Jan) Development of Aurantiochytrium limacinum SR21 cultivation using salt-rich waste feedstock for docosahexaenoic acid production and application of natural colourant in food product. **Bioresource Technology** 271: 30-36 [SCI; IF= 5.807]
27. Michal Safar, Bo-Jhih Lin, Wei-Hsin Chen, David Langauer, Jo-Shu Chang*, H. Raclavska, Anélie Pétrissans, Patrick Rousset, Mathieu Pétrissans (2019-Feb) Catalytic effects of potassium on biomass pyrolysis, combustion and torrefaction. **Applied Energy** 235:346-355 [SCI; IF= 7.900]
28. Congyu Zhang, Shih-Hsin Ho, Wei-Hsin Chen, Yujie Fu, Jo-Shu Chang, Xiaotao Bi (2019-Feb) Oxidative torrefaction of biomass nutshells: Evaluations of energy efficiency as well as biochar transportation and storage. **Applied Energy** 235:428-441[SCI; IF= 7.900]
29. Charles Felix, Aristotle Ubando, Cynthia Madrazo, Sylviana Sutanto, Phuong Lan Tran-Nguyen, Alchris Woo Go, Yi-Hsu Ju, Alvin Culaba, Jo-Shu Chang, Wei-Hsin Chen (2019-Feb) Investigation of direct biodiesel production from wet microalgae using definitive screening design. **Energy Procedia** 158: 1149-1154.

30. Xin-Jiat Lee; Pau-Loke Show; Tomohisa Katsuda; Wei-Hsin Chen; Jo-Shu Chang* (2018-Dec) Surface grafting techniques on the improvement of membrane bioreactor: State-of-the-art advances. **Bioresource Technology** 269:489-502 [SCI; IF= 5.807]
31. Wai Yan Cheah; Pau Loke Show; Joon Ching Juan; Jo-Shu Chang; Tau Chuan Ling (2018- Oct) Microalgae cultivation in palm oil mill effluent (POME) for lipid production and pollutants removal. **Energy Conversion and Management** 174: 430-438 [SCI; IF= 5.589]
32. Po-Chih Kuo; Jhao-Rong Chen; Wei Wu;Jo-Shu Chang (2018- Oct) Integration of calcium looping technology in combined cycle power plants using co-gasification of torrefied biomass and coal blends. **Energy Conversion and Management** 174: 489-503 [SCI; IF= 5.589]
33. Chiu-Mei Kuo; Jhong-Fu Jian; Yu-Ling Sun; Tsung-Hsien Lin; Yi-Chun Yang; Wen-Xin Zhang; Hui-Fang Chang; Jinn-Tsyy Lai; Jo-Shu Chang; Chih-Sheng Lin(2018-Oct) An efficient Photobioreactors/Raceway circulating system combined with alkaline-co_2 capturing medium for microalgal cultivation. **Bioresource Technology** 266: 398-406 [SCI; IF= 5.807]
34. Shih-Hsin Ho; Congyu Zhang; Wei-Hsin Chen; Ying Shen; Jo-Shu Chang (2018- Sep) Characterization of biomass waste torrefaction under conventional and microwave heating. **Bioresource Technology** 264: 7-16 [SCI; IF= 5.807]
35. Kit Wayne Chew; Pau Loke Show; Yee Jiun Yap; Joon Ching Juan; Siew Moi Phang; Tau Chuan Ling; Jo-Shu Chang (2018- Aug) Sonication and grinding pre-treatments on Gelidium amansii seaweed for the extraction and characterization of Agarose. **Frontiers of Environmental Science & Engineering** 12(4):2 [SCI; IF= 1.961]
36. Zhipeng Li; Zhen Chen; Hong Ye; Yuanpeng Wang; Weiang Luo; Jo-Shu Chang; Qingbiao Li; Ning He (2018- Aug) Anaerobic co-digestion of sewage sludge and food waste for hydrogen and VFA production with microbial community analysis. **Waste Management** 78:789-799 [SCI; IF= 2.77]
37. He-Shan Zheng; Wan-Qian Guo; Qu-Li Wu; Nan-Qi Ren; Jo-Shu Chang (2018- Jun) Electro-peroxone pretreatment for enhanced simulated hospital wastewater treatment and antibiotic resistance genes reduction. **Environment International** 115:70-78 [SCI; IF= 7.297]
38. Po-Chih Kuo; Jhao-Rong Chen; Wei Wu; Jo-Shu Chang (2018- Apr) Hydrogen production from biomass using iron-based chemical looping technology: Validation, optimization, and efficiency. **Chemical Engineering Journal** 337:405-415 [SCI; IF= 6.216]
39. Renli Yin; Wanqian Guo; Huazhe Wang; Juanshan Du; Xianjiao Zhou; Qinglian Wu; Heshan Zheng; Jo-Shu Chang*; Nanqi Ren (2018- Feb) Selective degradation of sulfonamide antibiotics by peroxymonosulfate alone: Direct oxidation and nonradical mechanism. **Chemical Engineering Journal** 334:2539-2546 [SCI; IF= 6.216]
40. Way-Rong Lin, Yu-Cheng Lai, Po-Kuei Sung, Shih-I Tan, Chien-Hsiang Chang, Chun-Yen Chen, Jo-Shu Chang, I-Son Ng (2018-Dec) Enhancing carbon capture and lipid accumulation by genetic carbonic anhydrase in microalgae. **Journal of the Taiwan Institute of Chemical Engineers** 93:131-141 [SCI; IF= 4.217]
41. Wei-Hsin Chen, Bo-Jhih Lin, Baptiste Colin, Jo-Shu Chang*, Anélie Pétrissans, Xiaotao T. Bi, Mathieu Pétrissans (2018) Hygroscopic transformation of woody biomass torrefaction for carbon storage. **Applied Energy** 231:768-776 [SCI; IF= 7.900]
42. Wei Wu, Keng-Hsien Lin, and Jo-Shu Chang (2018) Economic and life-cycle greenhouse gas optimization of microalgae-to-biofuels chains. **Bioresource Technology** 267:550-559 [SCI; IF= 5.807]
43. Yi-di Chen, Suping Li, Shih-Hsin Ho*, Chengyu Wang, Yen-Chang Lin, Dillirani Nagarajan, Jo-Shu Chang, Nan-qi Ren (2018-Nov) Integration of sludge digestion and microalgae cultivation

for enhancing bioenergy and biorefinery. **Renewable & Sustainable Energy Reviews** 96 : 76-90 [SCI; IF=9.184]

44. Kit Wayne Chew, Shir Reen Chia, Pau Loke Show, Tau Chuan Ling, Shalini S. Arya, Jo-Shu Chang (2018-Nov) Food waste compost as an organic nutrient source for the cultivation of Chlorella vulgaris. **Bioresource Technology** 267: 356-362 [SCI; IF= 5.807]
45. Kit Wayne Chew, Shir Reen Chia, Pau Loke Show*, Yee Jiun Yap, Tau Chuan Ling, Jo-Shu Chang (2018- Oct) Effects of water culture medium, cultivation systems and growth modes for microalgae cultivation: a review. **Journal of the Taiwan Institute of Chemical Engineers** 91: 332-344 [SCI; IF= 4.217]
46. Wei-Chuan Chen, Shan-Ming Chang, Jo-Shu Chang, Wen-Ming Chen, I-Ming Chu, Shen-Long Tsai, Li-Fen Wang, Yu-Kaung Chang and Yu-Hong Wei* (2018-May) A process for simultaneously achieving phenol biodegradation and polyhydroxybutyrate accumulation using Cupriavidus taiwanesis 187, **Journal of Polymer Research** 25:137 [SCI, IF:1.615]
47. Win Nee Phong; Pau Loke Show; Cheng Foh Le; Yang Tao; Jo-Shu Chang; Tau Chuan Ling (2018-Jul) Improving cell disruption efficiency to facilitate protein release from microalgae using chemical and mechanical integrated method. **Biochemical Engineering Journal** 135:83-90[SCI; IF=2.892]
48. Cong-Yu Zhang, Shih-Hsin Ho, Wei-Hsin Chen, Youping Xie, Zhenquan Liu, Jo-Shu Chang (2018-Jun) Torrefaction performance and energy usage of biomass wastes and their correlations with torrefaction severity index. **Applied Energy** 220:598-604 [SCI; IF= 7.900]
49. Pratyoosh Shukla*, Hao Liu, Jo-Shu Chang (2017) Engineering microbes for direct fermentation of cellulose to bioethanol. **Critical Reviews in Biotechnology** 38(7):1089-1105 [SCI; IF= 7.510]
50. Wai Yan Cheah; Pau Loke Show; Joon Ching Juan; Jo-Shu Chang*; Tau Chuan Ling (2018-Nov) Waste to Energy: The effects of Pseudomonas sp. on Chlorella sorokiniana biomass and lipid productions in palm oil mill effluent. **Clean Technologies and Environmental Policy** 20(9):2037-2045 [SCI; IF=3.331]
51. Tan Phat Lam, Tse-Min Lee, Chun-Yen Chen, and Jo-Shu Chang* (2018) Strategies to control biological contaminants during microalgal cultivation in open ponds. **Bioresource Technology** 252:180-187 [SCI; IF= 5.807]
52. Shimpei Aikawa, Kentaro Inokum, Satoshi Wakai, Kengo Sasaki , Chiaki Ogino, Jo-Shu Chang, Tomohisa Hasunuma and Akihiko Kondo* (2018) Direct and highly productive conversion of cyanobacteria Arthrospira platensis to ethanol with CaCl2 addition. **Biotechnology for Biofuels** 11:50 [SCI; IF= 5.203]
53. Wei-Hsin Chen*, Yen-Shih Chu, Jenn-Long Liu, Jo-Shu Chang (2018 - March) Thermal degradation of carbohydrates, proteins and lipids in microalgae analyzed by evolutionary computation. **Energy Conversion and Management** 160:209-219 [SCI; IF=5.589]
54. Shir Reen Chia, Kit Wayne Chew, Pau Loke Show, Yee Jiun Yap, Hwai Chyuan Ong, Tau Chuan Ling, Jo-Shu Chang* (2018-Jun) Analysis of Economic and Environmental Aspects of Microalgae Biorefinery for Biofuels Production: A Review. **Biotechnology Journal** 13(6)SI 1700618 [SCI; IF=3.649]
55. Chun-Yen Chen, I-Chia Lu, Dillirani Nagarajan, Chien-Hsiang Chang, I-Son Ng, Duu-Jong Lee, Jo-Shu Chang* (2018-April) A highly efficient two-stage cultivation strategy for lutein production using heterotrophic culture of *Chlorella sorokiniana* MB-1-M12. **Bioresource Technology** 253: 141-147 [SCI; IF= 5.807]
56. Gopalakrishnan Kumar, Sutha Shobana, Dillirani Nagarajan, Duu-Jong Lee, Kuo-Shing Lee, Chiu-Yue Lin, Chun-Yen Chen, Jo-Shu Chang* (2018-Apr) Biomass based hydrogen production

by dark fermentation – Recent trends and opportunities for greener processes. **Current Opinion in Biotechnology** 50:136-145 [SCI; IF= 9.294]

57. Yi-di Chen, Shih-Hsin Ho, Dillirani Nagarajan, Nan-qi Ren, Jo-Shu Chang* (2018-Apr) Waste Biorefineries - Integrating anaerobic digestion and microalgae cultivation for bioenergy production. **Current Opinion in Biotechnology** 50:101-110 [SCI; IF= 9.294].
58. Jianjun Hu, Dillirani Nagarajan, Quanguo Zhang, Jo-Shu Chang*, Duu-Jong Lee (2018-Jan) Heterotrophic cultivation of microalgae for pigment production: A review. **Biotechnology Advances** 38(1):54-67 [SCI; IF= 10.597].
59. Shih-Hsin Ho, Jing-Fu Liao, Chun-Yen Chen and Jo-Shu Chang* (2018) Combining light strategies with recycled medium to enhance the economic feasibility of phycocyanin production with Spirulina platensis. **Bioresource Technology** 247 669-675. [SCI; IF= 5.807]
60. Win Nee Phong, Pau Loke Show, Tau Chuan Ling, Joon Ching Juan, Eng-Poh Ng, Jo-Shu Chang* (2018-Apr) Mild cell disruption methods for bio-functional proteins recovery from microalgae - Recent developments and future perspectives. **Algal Research** 31:506-516 [SCI; IF= 3.994]
61. Shir Reen Chia, Kit Wayne Chew, Pau Loke Show, Hwai Chyuan Ong, Siew-Moi Phang, Tau Chuan Ling, Dillirani Nagarajan, Duu-Jong Lee, Jo-Shu Chang* (2018 Dec.) Sustainable Approaches for Algae Utilization in Bioenergy Production. **Renewable Energy** 129 (part B):838-852 [SCI; IF= 4.357]
62. Renli Yin, Wanqian Guo, Huazhe Wang, Juanshan Du, Xianjiao Zhou, Qinglian Wu, Heshan Zheng, Jo-Shu Chang*, Nanqi Ren (2018) Enhanced peroxymonosulfate activation for sulfamethazine degradation by ultrasound irradiation: Performances and mechanisms. **Chemical Engineering Journal** 335:145-153. [SCI; IF= 6.216]
63. Yi-di Chen; Shih-Hsin Ho*; Da-wei Wang; Zong-su Wei; Jo-Shu Chang; Nan-qi Ren (2018-Jan.) Lead removal by a magnetic biochar derived from persulfate-ZVI treated sludge together with one-pot pyrolysis. **Bioresource Technology** 247:463-470. [SCI; IF= 5.807]
64. Avik Banerjee, Chiranjib Banerjee, Sangeeta Negi, Jo-Shu Chang, and Pratyoosh Shukla* (2018) Improvements in algal lipid production: a systems biology and gene editing approach. **Critical Reviews in Biotechnology** 38(3):369-385 [SCI; IF= 7.510]
65. Wai Yan Cheah; Pau Loke Show; Joon Ching Juan; Jo-Shu Chang; Eng-Poh Ng; Ling Tau Chuan (2018-May) Enhancing biomass and lipid productions of microalgae in palm oil mill effluent using carbon and nutrient supplementation. Biochemical Engineering Journal 164:188-197 [SCI; IF= 2.892]
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專書

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專利

專利名稱(新發明)	**證書號碼**	**國別**	**專利期限**
評估界面活性劑對土壤石化污染物乳化能力的定量系統及方法	I356166	台灣	2012/01/11 -2028/08/27
鼠李糖酯的醱酵方法及其醱酵培養基	I363801	台灣	2012/05/11- 2028/08/24
纖維素單胞菌菌株及水解纖維生質物的方法	I369400	台灣	2012/08/01-2028/12/10
生物界面活性劑之製造方法	I372182	台灣	2012/09/11- 2027/08/28
光生物培育裝置	M453677	台灣	2013/05/21-2022/12/02
光生物反應系統	M469319	台灣	2014/01/01-2023/09/01
微藻總脂質之近紅外光譜定量方法	I421494	台灣	2014/01/01-2031/10/26
模組化快速分離萃取物之裝置的操作方法及裝置	I422418	台灣	2014/01/11- 2031/08/07

分離藻類之方法、裝置及其應用	I450756	台灣	2014/09/01-2032/05/24
核殼磁性複合物及其於生產生質柴油之應用	I454314	台灣	2014/10/01- 2031/12/01
Thermophilic bacterium and uses of extracellular proteins therefrom	US 8,828,238	美國	2014/09/09
具有二氧化碳捕集功能之微藻養殖裝置及方法	I479988	台灣	2015/04/11 -2032/08/27
有價金屬回收的方法	I487790	台灣	2015/06/11- 2033/11/05
Method for recycling metals	US 8,968,687	美國	2015/3/3
用於培養嗜熱性鹼性蛋白酶生產菌屬（Ｔｅｐｉｄｉｍｏｎａｓ）之菌的培養基以及方法	I490333	台灣	2015/07/01 -2033/12/25
製備生質柴油之方法、其製備裝置及其產物	I499667	台灣	2015/9/11-2032/4/22
油脂成分を産生する方法、高級不飽和脂肪酸の製造方法、及びクラミドモナス・ スピーシーズＪＳＣ４株	特許第 5719977 號	日本	2015/03/27
油脂成分を産生する方法、び高級不飽和脂肪酸の製造方法	特許第 5746796 號	日本	2015/05/15
產生嗜熱性鹼性蛋白酶生產菌屬	I541353	台灣	2016/7/11-2034/12/24
製備生質柴油之方法及其製備裝置	I555835	台灣	2016/11/1-2034/3/24
生物反應系統	M531483	台灣	2016/11/1-2026/8/1
新穎衣藻及其應用	I551682	台灣	2016/10/1-2035/2/2
固定二氧化碳用之小球藻及使用其固定二氧化碳之方法	I603776	台灣	2017/11/1-2035/12/30
新規クラミドモナス及びその応用	特許第 6152438 號	台灣	2017/06/02
生物反應系統	I638044	台灣	2018/10/11-2036/8/1
有機催化合成用固體酸性觸媒	I624303	台灣	2018/5/21-2035/11/26
耐鹼微藻株及使用其減量與再利用二氧	I614019	台灣	2018/2/11-2037/7/5

化碳的方法			
耐高溫及耐煙道氣之小球藻突變株及含彼之藻類生物反應器	I636132	台灣	2018/9/21-2037/12/27
誘發微藻細胞自解之活性物質的製造方法、由此方法所獲得之誘發微藻細胞自解之活性物質以及誘發微藻細胞自解的方法	I634213	台灣	2018/9/1-2034/12/17

技轉

年份	技轉名稱	技轉金額	對象
2016.10.1	高營養價值葉黃素藻種	3,000,000	綠茵生技股份有限公司
2016.8.1	高營養價值蝦紅素藻種	5,000,000	群融生物科技股份有限公司
2017.5.15	特殊功能之小球藻藻種	150,000	綠霸生物科技股份有限公司
2018.8.1	耐豬糞尿廢水之高蛋白質含量優勢藻種生產技術	10,000,000	英屬開曼群島商納諾股份有限公司