CHOSEL P. LAWAGON

Co-founder Nano Society of the Philippines
Director, Center of Green Nanotechnology Innovations for Environmental Solutions
Director, Institute of Emerging Technologies
University of Mindanao, Matina, Davao City
Balik Scientist, DOST-PCIEERD
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EDUCATION

Myongji University, South Korea **Doctor of Philosophy in Energy Science and Technology** Dissertation: Study on Lithium recovery from salt water via ion exchange and electrochemical systems with nanocomposites Advisor: Prof. Wook-jin Chung	2018
University of Mindanao **Master of Engineering – Chemical Engineering**	2013
University of Mindanao **Bachelors of Science in Chemical Engineering**	2010

ELIGIBILITY&CERTIFICATIONS

LEChE - Licensure Examination for Chemical Engineers	2010

PROFESSIONAL EXPERIENCE

Director Institute of Emerging Technologies University of Mindanao, Davao City, Philippines	2021 - Present
Director Center of Green Nanotechnology Innovations for Environmental Solutions University of Mindanao, Davao City, Philippines	2021 - Present
Research Faculty Research and Publication Center University of Mindanao, Davao City, Philippines	2020-2021
Postdoctoral Fellow Chemical Engineering Department Chulalongkorn University, Bangkok, Thailand	2019
Research Assistant Environment and Energy Fusion Technology Center Myongji University – Yongin Campus, South Korea	2013 to 2018

PROFESSIONAL EXPERIENCE

Projects:

- *Development of core production technology for the biorefinery and biofuel products from biomass*
  September 2015 to August 2018
- *Application of recovery process using nanofiber composite adsorbent for lithium production*
  November 2015 to October 2017

Lecturer
College of Engineering Education
University of Mindanao – Davao City, Philippines — 2011 to 2013

AWARDS

KABALIKAT AWARDEE - Newbie Researcher — 2023
Department of Science and Technology (DOST) - Philippine Council for Industry, Energy, and Emerging Technology Research and Development

Green Talents — 2021
German Federal Ministry of Education and Research (BMBF)

Balik Scientist Program Awardee — 2020
Department of Science and Technology – Philippine Council for Industry, Energy and Emerging Technology Research & Development

Postdoctoral Fellowship — 2019
Chulalongkorn University, Bangkok, Thailand

PUBLICATIONS

1. SKS Ponteras, CL Ocena, **CP Lawagon**, Hg and Pb Detection Utilizing d-Limonene from Sweet Oranges (Citrus Sinensis) Peelings, Chemical Engineering Transactions (2022) 92, 673-678
2. JCS Aguilar, **CP Lawagon**, Influence of Pressing Pressure on the Mechanical Properties of Durio zibethinus (Durian) Fiberboard, Journal of the Japan Institute of Energy (2022) 101 (12), 251-257
3. IY Damasco, JMM Gallawan, **CP Lawagon**, Synthesis of Nanocellulose from Durian Rinds for the Preparation of a Self-healing Smart Concrete with Augmented Mechanical Properties, Chemical Engineering Transactions (2022) 92, 667-672
4. SL T Sales, FJ Aldamia, PS Gonzaga, AJS Montesclaros, **CP Lawagon**, Properties of Fiber Cement Boards Influenced by BSCH (Banana Stem and Corn Husk) Fibers and Citric Acid Addition, Key Engineering Materials (2022), 913, 125-130
5. RE Amon, **CP Lawagon**, Efficient Removal of Cationic and Anionic Dyes from Wastewater using Carbon Nanotubes from Petrochemical Waste Oil, Chemical Engineering Transactions (2021) 86, 349-354
6. T Vanavanichkul, GTT Le, **CP Lawagon**, N Sano, N Viriya-empikul, et al., Step-by-step conversion of water hyacinth waste to carbon nanohorns by a combination of hydrothermal treatment, carbonization and arc in water processes, Diamond and Related Materials (2021) 111, 108222
7. JCS Aguilar, **CP Lawagon**, JMM Gallawan, JG Cabotaje, Hydroxyl-functionalized Graphene from Spent Batteries as Efficient Adsorbent for Amoxicillin, Chemical Engineering Transactions (2021) 86, 331-336

PUBLICATIONS

8. **CP Lawagon**, T Charinpanitkul, Facile Synthesis of Nickel-carbon Nanotube Composite from Petrochemical Waste Oil, Chemical Engineering Transactions (2021) 86, 1303-1308

9. **C.P. Lawagon**, T. Charinpanitkul, Sulfonated graphene oxide from petrochemical waste oil for efficient conversion of fructose into levulinic acid, Catalysis Today (2021), 375, 197-203.
10. **C.P. Lawagon**, R.E.C. Amon, Magnetic rice husk ash'cleanser'as efficient methylene blue adsorbent, Environ. Eng. Res. (2020) 25 (5), 685-692
11. **C.P. Lawagon**, M.F. Lacsado, Utilization of Graphite Rods from Waste Batteries to Produce Graphene Solvent for Augmented Mechanical Strength of Papers and Boards, Mater. Sci. Forum (2020) 1005, 131-138
12. **C.P. Lawagon**, G.M. Nisola, J. Mun, A. Tron, R.E.C. Torrejos, J.G. Seo, H. Kim, W.-J. Chung, Adsorptive Li^+ mining from liquid resources by H_2TiO_3: Equilibrium, Kinetics, Thermodynamics, and Mechanisms, J. Ind. Eng. Chem. (2016) 347-356.
13. **C.P. Lawagon**, G.M. Nisola, R.A. Cuevas, H. Kim, S.-P. Lee, W.-J. Chung, $Li_{1-x}Ni_{0.33}Co_{1/3}Mn_{1/3}O_2$/Ag for electrochemical Lithium recovery from brine, Chem. Eng. J. (2018) 1000-1011.
14. **C.P. Lawagon**, G.M. Nisola, R.A. Cuevas, H. Kim, S.-P. Lee, W.-J. Chung, Development of high capacity Li^+ adsorbents from H_2TiO_3/polymer nanofiber composites: Systematic polymer screening, characterization and evaluation, J. Ind. Eng. Chem. In Press, Accepted Manuscript. https://doi.org/10.1016/j.jiec.2018.10.003
15. **C.P. Lawagon**, G.M. Nisola, R.A. Cuevas, H. Kim, S.-P. Lee, W.-J. Chung, $Li_{1-x}Ni_{0.5}Mn_{1.5}O_4$/Ag for electrochemical lithium recovery from brine and its optimized performance via response surface methodology, Sep. Pur. Tech., In Press, Accepted Manuscript. https://doi.org/10.1016/j.seppur.2018.11.046
16. L.A. Limjuco, G.M. Nisola, **C.P. Lawagon**, S.-P. Lee, J.G. Seo, H. Kim, W.-J. Chung, H_2TiO_3 composite adsorbent foam for efficient and continuous recovery of Li^+ from liquid resources, Colloid. Surfaces A: Physicochem. Eng. Aspects 504 (2016) 267–279.
17. G.M. Nisola, L.A. Limjuco, E.L. Vivas, **C.P. Lawagon**, M.J. Park, H.K. Shon, N. Mittal, I.W. Nah, H. Kim, W.-J. Chung, Macroporous flexible polyvinyl alcohol lithium adsorbent foam composite prepared via surfactant blending and cryo-desiccation, Chem. Eng. J. 280 (2015) 536–548.
18. R.E.C. Torrejos, G.M. Nisola, H.S. Song, J.W. Han, **C.P. Lawagon**, J.G. Seo, S. Koo, H. Kim, W.J. Chung, Liquid-liquid extraction of lithium using lipophilic dibenzo-14-crown-4 ether carboxylic acid in hydrophobic room temperature ionic liquid, Hydrometallurgy. 164 (2016) 362–371.
19. M.J. Park, G.M. Nisola, E.L. Vivas, L.A. Limjuco, **C.P. Lawagon**, J.G. Seo, H. Kim, H.K. Shon, W.-J. Chung, Mixed matrix nanofiber as a flow-through membrane adsorber for continuous Li^+ recovery from seawater, J. Membr. Sci. 510 (2016) 141–154.
20. R.E.C. Torrejos, G.M. Nisola, H.S. Song, L. A. Limjuco, **C.P. Lawagon**, K.J. Parohinog, S. Koo, J.W. Han, W.J. Chung, Design of lithium selective crown ethers: Synthesis, extraction and theoretical binding studies, Chem. Eng. J. 326 (2017) 921–933.
21. W.-J. Chung, R.E. Torrejos, M.J. Park, E.L. Vivas, L.A. Limjuco, **C.P. Lawagon**, K.J. Parohinog, S.-P. Lee, H.K. Shon, H. Kim, G.M. Nisola, Continuous Lithium mining from aqueous resources by an adsorbent filter with a 3D polymeric nanofiber network infused with ion sieves, Chem. Eng. J. 309 (2017) 49–62.

https://scholar.google.com/citations?user=jLWXWMYAAAAJ&hl=en

	All	Since 2017
Citations	842	726
h-index	11	11
i10-index	11	11

PATENTS	
1. **Title:** METHOD FOR PREPARING HTO LITHIUM ION ADSORBENT AND LITHIUM ION RECOVERY USES THEREOF, **REGISTERED/APPROVED** https://doi.org/10.8080/1020160077386?urlappend=en http://engpat.kipris.or.kr/engpat/biblioa.do?method=biblioFrame **Application No.(Date) :** 1020160077386 (2016.06.21) **IPC:** C22B 26/12 C22B 3/42 B01J 20/02 B01J 20/04 **Applicant:** Myongji University Industry and Academia Cooperation Foundation **Right holder(current):** Myongji University Industry and Academia Cooperation Foundation	2016
2. **Title:** POLYVINYL ALCOHOL COMPOSITE FOAM COMPRISING LITHIUM ION SIEVE AND PREPARING METHOD THEREOF, **REGISTERED/APPROVED** https://doi.org/10.8080/1020150183631?urlappend=en http://engpat.kipris.or.kr/engpat/biblioa.do?method=biblioFrame **Application No.(Date):** 1020150183631 (2015.12.22) **IPC:** B01J 20/32 C08J 9/228 C08L 29/04 B01J 20/26 **Applicant:** Myongji University Industry and Academia Cooperation Foundation **Right holder(current):** Myongji University Industry and Academia Cooperation Foundation	2015
3. **Title:** MACROPOROUS HYPERCROSSLINKED CROWN ETHER EPOXY POLYMER RESIN AND LITHIUM ABSORBENT INCLUDING THE SAME, **REGISTERED/APPROVED** https://doi.org/10.8080/1020180048735?urlappend=en http://engpat.kipris.or.kr/engpat/biblioa.do?method=biblioFrame **Application No.(Date):** 1020180048735 (2018.04.26) **IPC:** C07D 323/00 C07D 303/04 **Registration Date : 2020.02.03** **Registration No. :** 1020748690000 **Applicant:** Myongji University Industry and Academia Cooperation Foundation **Right holder(current):** Myongji University Industry and Academia Cooperation Foundation	2018
4. **Title:** Platinum group metals selective crown ether, method for manufacturing the same and use as an absorbent, **REGISTERED/APPROVED** https://doi.org/10.8080/1020150183631?urlappend=en **Application No.(Date):** 1020180096813 (2018.08.20) **IPC:** C07D 273/08 C07D 291/08 **Applicant:** Myongji University Industry and Academia Cooperation Foundation	2018
5. **Title:** RECOVERY METHOD OF LITHIUM USING NMO, **REGISTERED/APPROVED**	

PATENTS	
https://doi.org/10.8080/1020180094540?urlappend=en **Application No.(Date):** 1020180094540 (2018.08.13) **IPC:** C22B 26/12 C22B 3/42 **Published Date:** 20200708 **Registration No.:** 1021293130000 **Registration Date:** 20200626 **Applicant:** Myongji University Industry and Academia Cooperation Foundation	2018
6. **Title:** LITHIUM ABSORBENT COMPRISING A COMPOSITE NANOSHEET IMPREGNATED WITH H2TiO3 AND METHOD FOR PRODUCING THE SAME, **REGISTERED/APPROVED** https://doi.org/10.8080/1020180098109?urlappend=en **Application No.(Date):** 1020180098109 (2018.08.22) **IPC:** B01J 20/28 B01J 20/26 **Published Date:** 20200820 **Registration No.** 1021460630000 **Registration Date:** 20200812 **Applicant:** Myongji University Industry and Academia Cooperation Foundation	2018
7. **Title:** RECOVERY METHOD OF LITHIUM USING NCM OXIDE, **REGISTERED/APPROVED** https://doi.org/10.8080/1020180094538?urlappend=en **Application No.(Date):** 1020180094538 (2018.08.13) **IPC:** C22B 26/12 C22B 3/42 **Published Date:** 20200721 **Registration No.** 1021337900000 **Registration Date:** 20200708 **Applicant:** Myongji University Industry and Academia Cooperation Foundation	

MEMBERSHIPS
• Philippine Institute of Chemical Engineers • Korean Institute of Chemical Engineers • American Institute of Chemical Engineers • National Research Council of the Philippines

RESEARCH PROJECTS HANDLED	
Center of Green Nanotechnology Innovations for Environmental Solutions Funded by: DOST-PCIEERD Position: Project Leader December 2020 - November 2022	2020 – 2022
Hg and Pb Detection Kit Utilizing D-limonene from Sweet Orange (Citrus sinensis) Peelings Funded by: Young Innovators Program by DOST-PCIEERD Position: Project Leader/Mentor December 2020 - October 2021	2020 – 2021

RESEARCH PROJECTS HANDLED	
Synthesis of nanocellulose from durian rinds and nanosilica from rice hulls for the preparation of self-healing smart concrete with augmented mechanical properties Funded by: Young Innovators Program by DOST-PCIEERD Position: Project Leader/Mentor December 2020 - October 2021	2020 – 2021
Engineered smart concrete utilizing indigenous wastes for durable and intelligent infrastructure Funded by: DOST-PCIEERD Position: Project Leader August 2021 – July 2023	2021 – 2023
Development of nanofertilizer from poultry waste biogas digester Funded by: DOST-PCAARRD Position: Project Leader April 2022 – April 2024	2022 – 2024
Development of Electrodialysis with Bipolar Membrane for the Simultaneous Recovery of Cobalt and Lithium from Waste Secondary Batteries Funded by: DOST-PCAARRD Position: Project Leader June 2022 – June 2024	2022 – 2024