

Curriculum Vitae
Pornchai Rachtanapun



1. Biodata

1.1 Name: Professor Dr. Pornchai Rachtanapun

1.2 Address: Division of Packaging Technology, Faculty of Agro-Industry,
Chiang Mai University, Muang, Chiang Mai 50100 Thailand
Tel: +666-35492556, +665-3948224; Fax: +665-3948206
E-mail: pornchai.r@cmu.ac.th

1.3 Date of Birth: 28 November 1971

1.4 Academic History

Degree	Year	Institution
1.4.1 Doctor of Philosophy (Packaging)	2003	Michigan State University, USA
1.4.2 Master of Science in Chemistry (Polymer Chemistry)	1999	Michigan Technological University, USA
1.4.3 Bachelor of Science (Packaging Technology)	1993	Kasetsart University, Thailand

Certificate

1.4.4 Certificate of Attendance Understanding ISO 22000:2005 Requirements Training Course	2006	BUREAU VERUTAS (Thailand) Ltd.
1.4.5 HACCP Expert	2003	Food Institute Technology, Thailand
1.4.6 Certificate of Attendance Train	2003	Food Institute

	the Trainer for GMP and HACCP		Technology, Thailand
1.4.7	Certificate of Marketing Strategy	1995	Chulalongkorn University, Thailand
1.4.8	Certificate of New Researcher	1994	Chiang Mai University and National Research Council of Thailand
1.4.9	Certificate of Tourist Guide	1993	Thammasart University and Tourism Authority of Thailand

Training Courses

Turn Passion to Wealth, Landmark Forum, Landmark Advanced, Communication, Advanced Communication, Millionaire Mind Intensive, Gallia Business, Train the Trainer

1.5 Scholarships and Awards

- 2023 Gold Award “M-Zlex Innovation of Sexed Sorting Bull Sperm using Micromagnetic Coupled with Recombinant Antibody”, Seoul International Invention Fair, November 1-4, 2023. K. Sringarm, **P. Rachtanapun**, S. Hongsibsong, W.Pattanawong, K. Jantanasakulwong and M. Thongkham
- 2023 Gold Award “Fabrication of Metal Oxide Nanoparticle-Coated Poly(vinyl chloride) Films by Sparking Process for Use As Ethylene Absorbers”, Seoul International Invention Fair, November 1-4, 2023. W. Punyodom, S. Photphroet, K., Jantanasakulwong and P. Singjai, **P. Rachtanapun**
- 2023 Silver Award “Egg coating for extending shelf-life of fresh egg. Seoul International Invention Fair, November 1-4, 2023. K. Jantanasakulwong, **P. Rachtanapun** and N. Thajai

- 2023 Distinguished Innovation Award From King Abdulaziz University “Egg coating for extending shelf-life of fresh egg. Seoul International Invention Fair, November 1-4, 2023.
K. Jantanasakulwong, **P. Rachtanapun** and N. Thajai
- 2023 Bronze Award “NanoPlas-Paper” Water Repellent Paper with Plasma Nanocoating”, Seoul International Invention Fair, November 1-4, 2023. **P. Rachtanapun**, D. Boonyawan, S. Thanakkasarnee, K. Jantanasakulwong, R. Auras, R. Panyathip and K. Gopinath
- 2023 Special Award From Indonesian Invention and Innovation Promotion Assosiation “NanoPlas-Paper” Water Repellent Paper with Plasma Nanocoating”, Seoul International Invention Fair, November 1-4, 2023. **P. Rachtanapun**, D. Boonyawan, S. Thanakkasarnee, K. Jantanasakulwong, R. Auras, R. Panyathip and K. Gopinath
- 2023 First Award “Fabrication of Metal Oxide Nanoparticle Coated Poly(Vinyl Chloride) Films by Sparking Process for Use as Ethylene Absorber in The 11st National Nanotechnology Innovation Contest by King Mongkut's Institute of Technology Ladkrabang (KMITL) between August 23-24, 2023, W. Punyodom, S. Photphroet, K., Jantanasakulwong and P. Singjai, **P. Rachtanapun**
- 2023 Third Award “NanoPlas Paper” Water Repellent with Plasma Coating”, in The 11st National Nanotechnology Innovation Contest by King Mongkut's Institute of Technology Ladkrabang (KMITL) between August 23-24, 2023, **P. Rachtanapun**, D. Boonyawan, S. Thanakkasarnee, K. Jantanasakulwong, R. Auras, R. Panyathip and K. Gopinath
- 2023 Fourth Award “Synthesis and Characterization of alpha Chitosan and Beta Chitosan for Antimicrobial Application and Shelf-Life Extension of Banana Fruit”, in The 11st National Nanotechnology Innovation Contest by King Mongkut's Institute of Technology Ladkrabang (KMITL) between August 23-24, 2023, Sasina Hinmo, Kittisak Jantanasakulwong, Parichat Thipchai, **Pornchai Rachtanapun*** and Winita Punyodom *

- 2022 **World's Top 2% Scientists 2022** Single Year Impact in Polymer
- 2022 Certificate of Appreciation from the Ministry of Higher Education, Science Research and Innovation and National Research Council of Thailand are honored to award this certificate to “Smart TTI Intelligent time-temperature-indicator from biopolymer for fresh produce”, **Pornchai Rachtanapun***, Aphisit Saenjaiban, Winita Punyodom, Kittisak Jantanasakulwong, and Sarinthip Thanakkasaranee.
- 2022 Award: “**Education and Scientific Research 2022 by Professor Dr.Tab Nilanidhi Foundation.**”, **Ranked 1st in the highest academic record in the field of study under affiliation.** Nanthicha Thajai, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, and Winita Punyodom*.
- 2022 Award: “Bronze Prize”, Excellent efforts in creating invention. “Smart TTI Intelligent time-temperature-indicator from biopolymer for fresh produce”, in Seoul International Invention Fair 2022” (SIIF 2022) (16-19 November 2022) at Seoul, Korea. **Pornchai Rachtanapun***, Aphisit Saenjaiban, Winita Punyodom, Kittisak Jantanasakulwong, and Sarinthip Thanakkasaranee.
- 2022 Award: “Best Master's Thesis Award for Academic Year 2022” , Title: Mechanical and Antimicrobial Property Improvement Thermoplastic Starch with Chlorhexidine Gluconate by Reactive Blending. Nanthicha Thajai, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, and Winita Punyodom*.
- 2022 Award: “Outstanding Proposals Award in Invention and Innovation Award of the National Research Council of Thailand for the year 2022. Agriculture and Agro-Industry Branch “ Intelligent Time-temperature-Indicator from Biopolymers for Fresh Produce”, Aphisit Saenjaiban, Sarinthip Thanakkasaranee, Kittisak Jantanasakulwong, Winita Punyodom and **Pornchai Rachtanapun***
- 2022 Award: “Excellent Trophy Award” in Invention and Innovation Award of

the National Research Council of Thailand for the year 2022. Agriculture and Agro-Industry Branch “ Intelligent Time-temperature-Indicator from Biopolymers for Fresh Produce”, Apisit Saenjaiban, Sarinthip Thanakkasaranee, Kittisak Jantanasakulwong, Winita Punyodom and **Pornchai Rachtanapun***.

2022 Award: “Good Trophy Award” in Invention and Innovation Award of the National Research Council of Thailand for the year 2022. Agriculture and Agro-Industry Branch “ Fabrication of Metal Oxide Nanoparticle Coated Poly (vinyl chloride) Films by Sparking Process for Use As Ethylene Absorbers”, Siriphan Photphroet, Kittisak Jantanasakulwong, **Pornchai Rachtanapun** and Winita Punyodom *,

2022 Award: “Gold Medal Award” in Invention and Innovation Award of the National Research Council of Thailand for the year 2020 Agriculture and Agro-Industry Branch “ Intelligent Time-temperature-Indicator from Biopolymers for Fresh Produce”, Apisit Saenjaiban, Sarinthip Thanakkasaranee, Kittisak Jantanasakulwong, Winita Punyodom and **Pornchai Rachtanapun***.

2022 Award: “Gold Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2022. Agriculture and Agro-Industry Branch “ Fabrication of Metal Oxide Nanoparticle Coated Poly(vinyl chloride) Films by Sparking Process for Use As Ethylene Absorbers”, Siriphan Photphroet, Kittisak Jantanasakulwong, **Pornchai Rachtanapun*** and Winita Punyodom *.

2022 Award: “Silver Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2022. Agriculture and Agro-Industry Branch “Synthesis and Characterization of Nano chitosan from α -Chitosan and β -Chitosan with Methacrylic Acid for Antimicrobial

- Application”, Sasina Hinmo, Kittisak Jantanasakulwong, Parichat Thipchai, **Pornchai Rachtanapun*** and Winita Punyodom *,
- 2022 Award: “Silver Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2022. Medical science branch “Hydrogel from carboxymethyl cellulose/polyvinyl alcohol for application as a patch for treating skin inflammation”, Kanticha Pratinthong, Kittisak Jantanasakulwong, Pensak Jantrawut, **Pornchai Rachtanapun*** and Winita Punyodom *,
- 2022 Award: “Ranked 1st” Best Oral Presentation, Titles: “Production and Characterization of Nanocellulose from Non-Wood Fibers for Future Applications”, at the meeting of the research group on the development of biofuel production processes and value-added substances from agricultural biomass. This event, supported by the Research Promotion Grant for Senior Research Scholars from the NRCT and led by Professor Dr. Alisara Ruangsaeng, between July 28th and 30th, 2022 at Rancho Charnvee Resort Khaoyai & CountryClub in Nakhon Ratchasima Province, Thailand. Parichat Thipchai, Winita Punyodom, Kittisak Jantanasakulwong, Pensak Jantrawut, **Pornchai Rachtanapun***
- 2022 Award: “Ranked 2st” Best Oral Presentation, Titles: “Efficacy of Biodegradable-Based Films on Thermochromism in Polydiacetylene-Silver Nanocomposites as Time-Temperature Indicator”, This event, supported by the Research Promotion Grant for Senior Research Scholars from the NRCT and led by Professor Dr. Alisara Ruangsaeng, between July 28th and 30th, 2022 at Rancho Charnvee Resort Khaoyai & CountryClub in Nakhon Ratchasima Province, Thailand. Apisit Saenjaiban, Sarinthip Thanakkasaranee, Kittisak Jantanasakulwong, Winita Punyodom and **Pornchai Rachtanapun***
- 2022 Award: “Silver Medal” in I-New Gen Innovation Award, (Group 4 Energy,

Chemicals and Biological Materials) National Research Office (NRCT), “Inventor Day 2021 - 2022” and youth invention award ceremony in the Thailand New Gen Inventor project “Para Wrap: General Purpose Natural Rubber Wrap Film”, Nisakarn Jangphon, Warunee Laklaem, Siwarot Bunrasri, **Pornchai Rachtanapun**, and Napatthamonth Muanfu

- 2021 **World’s Top 2% Scientists 2021** Single Year Impact in Polymer
- 2021 Award: “Bronze Medal”, 11th Science Classrooms in University-Affiliated School Project (SCiUS) forum, “Synthesis, characterization and Evaluation of Antibacterial Activities of Carboxymethyl Chitosan/Glutaraldehyde Hydrogel Films Loaded Thyme Oil”, Kanyarat Baiya, Techit Kulkanlayakornkamol, Ploychompoo Keanpet, Pensak Jantrawut (Co-Advisor), **Pornchai Rachtanapun* (Advisor)**
- 2021 Award: “Bronze Medal”, 11th Science Classrooms in University-Affiliated School Project (SCiUS) forum, “Superabsorbent Crosslinked Carboxymethyl Cellulose (CMC) and Polyvinyl Alcohol (PVA) Hydrogel for Removal of Cadmium Ions from Water”, Purichaya Puwathananon and Vipavee Chusri, Pensak Jantrawut (Co-Advisor), **Pornchai Rachtanapun* (Advisor)**
- 2020 Award: “Bronze Medal”. The 46th International Congress on Science, Technology and Technology-Based Innovation Young Rising Stars of Science 2020 in Biology at The Science Society of Thailand under The Patronage of His Majesty the King, Panchat Thipchai, Sasina Hinmo and **Pornchai Rachtanapun*** (Advisor)
- 2020 Award: “Gold Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2020. “KU-Casing: Antimicrobial and Antioxidant Casing”, Juthamas Tantala, Chitsiri Rachtanapun*, Kanitporn Wangnai and **Pornchai Rachtanapun**

- 2020 Award: “Silver Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2020. “Study the Properties of Nanocellulose from Bamboo and its Applications”, Panchat Thipchai, Sasina Hinmo and **Pornchai Rachtanapun***, Kittisak Jantanasakulwong, Choncharoen Sawangrat, Winita Punyodom and Pensak Jantrawut
- 2020 Award: “Silver Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2020. “Anti-fogging LDPE Film with Aluminum Oxide Nanoparticles by Sparking Process”, Siriphan Photphroet, Kanticha Pratinthong, Aphisit Saenjaiban **Pornchai Rachtanapun***, Pisith Singjai, Winita Punyodom and Kittisak Jantanasakulwong
- 2020 Award: “Silver Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2020. “Insole Bio-Thermoplastic Elastomer from Thermoplastic Starch-Chitosan Blend with Epoxidized Natural Rubber and Antimicrobial Additive”, Araya Kodsangma, Nattagarn Homsaard, Kittisak Jantanasakulwong*, **Pornchai Rachtanapun** and Phisit Seesuriyachan
- 2020 Award: “Silver Medal” in Invention and Innovation Award of the National Research Council of Thailand for the year 2020. “Development of Egg Coating from Biomaterials”, Nattagarn Homsaard, Araya Kodsangma, Kittisak Jantanasakulwong, **Pornchai Rachtanapun** and Phisit Seesuriyachan
- 2020 Award: Outstanding Alumni of Kasetsart University 2020, Category Researcher.
- 2019 Award: Good Dissertation Award 2019, Bioscience Group, Division of Food Science, Topic “Antimicrobial and Antioxidant Activity of Sausage Casing Impregnated by Natural Active Compounds”, Juthamas Tantala, Kanithaporn Vangnai, **Pornchai Rachtanapun** and Chitsiri Rachtanapun*, Graduate School, Kasetsart University, September 23, 2019.

- 2019 Award: "runner-up" in Nanotechnology Innovation In The Higher Education and Individuals, Topic "Intelligent packaging as time-temperature-indicator from silver nanocomposites for agricultural and food" in *The 10th National Nanotechnology Innovation Contest between August 26-27, 2019*, Aphisit Saenjaiban, Teeranuch Singtisan, Panuwat Suppakul and **Pornchai Rachtanapun***
- 2019 Award: "Outstanding Proposal Award", Higher Education Innovation Project Proposal Contest 2019. "Intelligent packaging as time-temperature-indicator from silver nanocomposites for agricultural and food", in Thailand Research Expo 2019 (7-9 April 2019). Aphisit Saenjaiban, Teeranuch Singtisan, Panuwat Suppakul and **Pornchai Rachtanapun***.
- 2019 Award: "Silver Medal", in Invention and Innovation Award of the National Research Council of Thailand for the year 2019. "Intelligent packaging as time-temperature-indicator from silver nanocomposites for agricultural and food". Thailand Research Expo 2019 (7-9 April 2019). Aphisit Saenjaiban, Teeranuch Singtisan, Panuwat Suppakul and **Pornchai Rachtanapun***.
- 2019 Award: "Bronze Medal", in Invention and Innovation Award of the National Research Council of Thailand for the year 2019. "Physiochemical properties of non-dairy yoghurt with purple sweet potato prebiotic". Thailand Research Expo 2019 (7-9 April 2019). Napat Thapbamrung, Nod Trakulintr, Pitchaya Vongpaisan, **Pornchai Rachtanapun** and yasinee Chakrabandhu*.
- 2019 Award: "4 Stars" The potential and standards Incensement of college education personnel: Cultivate and exchange knowledge to develop inventions and innovations. "Intelligent packaging as time-temperature-indicator for the agricultural product from the core-shell structure of silver nanoparticles and Polydiacetylene embedded Bio-polymer". National Research Council of Thailand (NRCT) (4-6 February 2019) By Aphisit

Saenjaiban, Teeranuch Singtisan, Panuwat Suppakul and **Pornchai Rachtanapun***.

- 2014 Award: Outstanding Researcher, Faculty of Agro-Industry, Chiang Mai University, the year 2014
- 2013 Award: “Outstanding Senior Researcher”, Faculty of Agro-Industry, Chiang Mai University, the year 2013
- 2012 Listed in the Marquis’s 29th Edition of Who’s Who in the World (2012)
- 2011 Award: “Outstanding Researcher”, Faculty of Agro-Industry, Chiang Mai University, the year 2011
- 2011 Award: “Honorable Mention Award” on topic of “Mechanical and Thermal Properties of Soy Protein Isolate Films Blended with Carboxymethyl Chitosan”, The Proceedings of 49th Kasetsart University Annual Conference, February 1-4, 2011, Bangkok, Thailand. **Pornchai Rachtanapun*** and Rungsiri Suriyatem.
- 2011 Award: “Third Prize Award”, on the topic of “¹H-NMR Analysis of Degree of Substitution in N,O-Carboxymethyl Chitosans from Various Sources and Types”, from *Chiang Mai International Conference on Biomaterials & Applications (CMICBA 2011)*, 9-10 August 2011, Chiang Mai, Thailand, by A. Jaidee, S. Luangkamin, **P. Rachtanapun**.
- 2011 Award: “The Most Promising Scientific Work Award”, on the topic of “Effects of Treatment Time by Sulfur Hexafluoride (SF₆) Plasma on Barrier and Mechanical Properties of Paperboard” from *25th IAPRI Symposium on Packaging*, Berlin, Germany By Tanyarut Jinkarn, Suchada Thawornwiriyanan, Dheerawan Boonyawan, **Pornchai Rachtanapun** and Amporn Sane. (May 16-18, 2011)
- 2009 Award: “Outstanding New Researcher”, Faculty of Agro-Industry, Chiang Mai University, the year 2009
- 2009 Award: “Winning Award”, Innovation of Kasetsart University, Branch Agro-Industry 2009 from Kasetsart University in Agro-Industry, “Effects of Treatment Time by Sulfur Hexafluoride (SF₆) Plasma on Barrier and

- Mechanical Properties of Paperboard”, Tunyarut Jinkarn, Suchada Thawornwiriyanan, Amporn Sane, Dheerawan Boonyawan and **Pornchai Rachtanapun**
- 2004 Royal Thai Government Scholarship, Thai Kitchen to World Kitchen, Japan (October 2-15, 2004)
- 2003 Recognition for significant contributions made to the society and the plastic industry, Thermoplastic Materials and Foams Division Society of Plastics Engineers, Inc. (May 4, 2003)
- 2003 Travel Grants Recognition from Michigan State University on Topics of
-“Characterization of Microcellular Foamed Polyolefin Blend Composites with Wood Fiber”, New Orleans, LA.
-“Cell Morphology and Impact Strength of Microcellular Foamed HDPE/PP Blends”, Nashville, TN.
-“Effect of Melt Index of HDPE on Microcellular Foaming of HDPE/PP Blends”, Bethlehem, PA
- 1998 Research Assistance, Department of Chemistry, Michigan Technological University, USA
- 1998 Teaching Assistance, Department of Chemistry, Michigan Technological University, USA
- 1997-2003 Royal Thai Government Scholarship, Ministry of University Affairs (MUA)
- 1993 The Admiring Award for Packaging Design. Thai Packaging Center for Export Contest, Bangkok, Thailand (1993)

2. Research

2.1. Research Interest

- 2.1.1. Biopolymer based films
- 2.1.2. Synthesis and characterization of derivatives (carboxymethyl) of cellulose, chitosan and starch and their applications
- 2.1.3. Active and intelligent packaging technology
- 2.1.4. Nanotechnology in packaging

2.1.5. Packaging from agro-industry and agricultural wastes

2.2. **Research Project**

- 2.2.1. Project Leader: “TRF Senior Research Scholar 2024” National Research Council of Thailand (NRCT). Funding: 7,500,000 Bath. Duration Time: 2025 - 2026
- 2.2.2. Project Leader: “Multifunction active packaging for ethylene absorber and antimicrobial by sparking process to extend the shelf life of banana and tomato in commercial” Research and Researchers Funds for Industries (RRi). Funding: 1,200,000 Bath. Duration Time: 2024 - 2025
- 2.2.3. Project Coordinator: “Hub of Talents” Hub of Talents: Bioplastics for Use in Medical Applications) 2024, Research and Innovation Funding: 15,000,000 Bath. Duration Time: 2025 - 2026
- 2.2.4. Project Leader: “Investigation of Factors Influencing Corrugated Box Crack after Printing and Identification of Optimal Condition to Reduce Corrugated Box Crack” Research and Researchers Funds for Industries (RRi). Funding: 500,000 Bath. Duration Time: 2024 - 2025
- 2.2.5. Project Coordinator: “Developing a plasma generator for surface modification in post-harvest waste food packaging” Program Management Unit for Competitiveness Enhancement (PMU-C) 2024-2025, Research and Innovation Funding: 6,822,300 Bath. Duration Time: 1 October 2024 - 30 September 2025
- 2.2.6. Leader of Sub-Project and Project Coordinator: “Smart packaging innovation from bio-based materials 2nd year” Fundamental Fund 67. Funding: 2,500,000 Bath. Duration Time: 1 October 2023 - 30 September 2024
- 2.2.7. Project Coordinator: “Biomaterials and Tools for Medical Applications and Packaging” Research Administration Center, Chiang Mai University. Duration Time: August 2023- September 2024

- 2.2.8. Project Coordinator: “Plasma Innovation Research Center for Sustainable Quality of Life” Research Administration Center, Chiang Mai University. Funding: 4,000,000 Bath. Duration Time: August 2023- September 2024
- 2.2.9. Project Leader: “Advanced valorization of lignocellulose and nanocellulose from agro-industrial biomass using green biorefinery strategy for effective mitigation of NCDs and PM2.5” Fundamental Fund 67. Funding: 4,250,000 Bath. Duration Time: 1 October 2023 - 30 September 2024
- 2.2.10. Project Leader: “Advanced valorization of lignocellulose and nanocellulose from agro-industrial biomass using green biorefinery strategy for effective mitigation of NCDs and PM2.5” Fundamental Fund 66. Funding: 4,530,000 Bath. Duration Time: 1 October 2022 - 30 September 2023
- 2.2.11. Project Leader: “Preparation and Characterization of Nanocellulose from non- wood fibers and their applications” Fundamental Fund 65. Funding: 850,000 Bath. Duration Time: 1 October 2021 - 30 September 2022
- 2.2.12. Project Leader: “Anti-viral, anti-bacterial and anti-fungal of biomaterials and their applications in Covid-19” Fundamental Fund 65. Funding: 3,000,000 Bath. Duration Time: 1 October 2021 - 30 September 2022
- 2.2.13. Project Consultant: Antimicrobial bio-composite film based on carboxymethyl chitosan and calcium oxide. The 37th (FY2021) The Murata Science Foundation. Funding: 500,000 Yen (200,000 Bath). Duration Time: October 1, 2021- September 31, 2022
- 2.2.14. Project Coordinator: Development of Reinforcing Materials in Concrete by Natural Fiber Bars, PMUB, Funding: 8,312,348 Bath. Duration Time: October,1 2021- September 31, 2023.
- 2.2.15. Project Consultant: Biopolymer/metal oxide composites as antimicrobial material, Faculty of Agro-Industry, Chiang Mai University. Funding: 70,000 Bath. Duration Time: 1 October 2020 - 30 September 2021.

- 2.2.16. Project Leader: AGRO BCG (Agro Bio-Circular-Green Industry). Funding Agency: Office of Research Administration (ORA), Chiang Mai University 2021. Funding: 3,950,000 Bath. Duration Time: 1 October 2020 - 30 September 2021
- 2.2.17. Project Leader: “Active Face Shield to Prevent Corona Virus”. Funding Agency: National Science and Technology Development Agency. Research Gap Fund 2020 Funding: 900,000 Bath. Duration Time: 1 June-31 July 2020
- 2.2.18. Project Coordinator: Production Development Based on Processed Native Chicken for General and Niche Market. Integrated and Strategic Approach Promoting Economic Value of Thai Native Chicken Production for Income Raising and Distribution of Northern Thailand Farmers. Funding Agency: National Research Council of Thailand (NRCT). Funding 1,945,250 Bath. Duration Time: 1 January 2021-31 December 2022.
- 2.2.19. Project Coordinator: Development of reinforcing material for concrete from natural fibers: Funding Agency: National Research Council of Thailand (NRCT). Funding 8,312,348.00 Bath. Duration Time: 1 March 2021 - 29 February 2024
- 2.2.20. Project Coordinator: Basic Research Fund 2021 Faculty of Science, Chiang Mai University. Funding: 13,100,000 Bath: The state budget passed Chiang Mai University. Duration Time: 1 October 2020- 30 September 2021.
- 2.2.21. Project Leader: Product development of natural rubber blending with water hyacinth fiber. Funding Agency: Basic Research 2021. Funding: 2,500,000 Bath. Duration Time: 1 October 2020- 30 September 2021.
- 2.2.22. Project Leader: The effect of type of base films and glycerol on color change of polydiacetylene (PDA)/silver nanoparticles for time-temperature indicator of food and agricultural produce. Funding Agency: Middle Age Researcher Chiang Mai University 2020-2021. Funding 200,000 Bath. Duration Time: 1 October 2020- 30 September 2021.

- 2.2.23. Project Coordinator: Frontier Global Partnership for Strengthening Cutting-edge Technology and Innovations in Materials Science Global Partnership. Funding Agency: the Program Management Unit for Human Resources & Institutional Development, Research and Innovation, Office of National Higher Education Science Research and Innovation Policy Council (NXPO) Year 2021. Funding 19,856,100 Bath. Duration Time: 1 December 2020- 30 November 2021
- 2.2.24. Project Leader: Low Cost Nanocellulose Production from Different Types of Bamboos for Industrial Productions. Funding Agency: Technology to Industry Convergence Deep Tech, STeP 2020. Funding 500,000 บาท Bath. Duration Time: 1 September-30 April 2021.
- 2.2.25. Project Leader: Study of Time-Temperature Indicator base biopolymers Films with Polydiacetylene (PDA) and Silver nanoparticles for Fresh meat or Fresh produce Applications. Funding Agency: Technology to Industry Convergence Deep Tech, STeP 2020. Funding 500,000 Bath. Duration Time: 1 September-30 April 2021.
- 2.2.26. Project Coordinator: Development of Innovative Bio-Based Materials from Agricultural Resources. Funding Agency: Technology to Industry Convergence Deep Tech, STeP 2020. Funding 500,000 Bath. Duration Time: 1 September-30 April 2021.
- 2.2.27. Project Coordinator: Development of 3D fibers from bamboo fiber mixed with polylactic acid. Funding Agency: Technology to Industry Convergence Deep Tech, STeP 2020. Funding 500,000 Bath. Duration Time: 1 September-30 April 2021.
- 2.2.28. Project Coordinator: Development of frozen food packaging from bioplastics Funding Agency: Technology to Industry Convergence Deep Tech, STeP 2020. Funding 500,000 บาท Bath. Duration Time: 1 September-30 April 2021.
- 2.2.29. Project Coordinator: Valorization of Agricultural Waste in Chiang Rai Province for Fiber Extraction and Production of Biodegradable Molded

Pulp Tray from Pineapple Leaf Fiber (cv. Pattawia, Nanglae and Phulae). Funding Agency: the Program Management Unit for Human Resources & Institutional Development, Research and Innovation, Office of National Higher Education Science Research and Innovation Policy Council (NXPO) Year 2021. Funding 500,000 Bath Duration Time: 1 October 2019- 30 September 2020.

- 2.2.30. Cellulose Preparation from Peduncles of Cavendis Banana for Molded Pulp Tray Production. Funding Agency: Annual Government Statement of Expenditure.
- 2.2.31. Project Leader: Anti-Corona Virus and Anti-Fogging Polyethylene Terephthalate (PET) Film and Active Face Shield. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2020- 30 September 2021.
- 2.2.32. Project Leader: Carboxymethyl Bacterial Cellulose from Nata de Coco: Effects of NaOH. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2020- 30 September 2021.
- 2.2.33. Project Leader: Effect of Monochloroacetic Acid on Properties of Carboxymethyl Bacterial Cellulose Powder and Film from Nata de Coco Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.34. Project Leader: Synthesis, Characterization, and Application of Carboxymethyl Cellulose from Asparagus Stalk End. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.35. Project Leader: Nanocellulose from Bamboo and Its Application as A Film Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.

- 2.2.36. Project Leader: Synergistic Antimicrobial Activities of Thai Household Essential Oils in Chitosan Film. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.37. Project Leader: Characterization of chitosan film incorporated with curcumin extract. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Funding 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.38. Project Leader: New vegetable oils with different fatty acids on natural rubber composite properties Funding Agency: Materials Science Research Center. Funding: 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.39. Project Leader: Antioxidant films from cassava starch/gelatin biocomposite fortified with quercetin and TBHQ and their applications in food models. Funding Agency: Materials Science Research Center. Funding: 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.40. Project Coordinator and Consultant: Development of Chitosan Nanoparticles Film from Seafood Wastes Blended with Spirulina against Escherichia coli and Vibrio parahaemolyticus of Fresh Squid Meat Funding Agency: Scholarship for The development of young researchers Chiang Mai University year 2021. Funding: 200,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.41. Project Leader: Time-Temperature Indicator of Nanocomposite Biopolymers Based Film incorporating with Polydiacetylene(PDA)/Silver Oxide Nanoparticles. Funding Agency: The Royal Golden Jubilee Ph.D. Program 22nd generation. Funding: 2,062,000 Bath. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.42. Project Coordinator: The use of plasma in the production of packaging films to extend the shelf life of food. Funding Agency: National Research

Council of Thailand. Funding: 1,982,794 Bath. Duration Time: 1 October 2019 - 30 September 2020.

- 2.2.43. Project Leader: “Characteristics and Antimicrobial Properties of Active Edible Films Based on Pectin and Nanochitosan”, Funding 220,000 Bath. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.44. Project Leader: Physical and Antioxidant Properties of Cassava Starch–Carboxymethyl Cellulose Incorporated with Quercetin and TBHQ as Active Food Packaging” Funding 220,000 Bath. Funding Agency: Cluster of Agro Bio Circular Green Industry (AGRO BCG). Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.45. Project Leader: AGRO BCG (Agro Bio-Circular-Green Industry). Funding 3,940,000 Bath. Funding Agency: Office of Research Administration (ORA), Chiang Mai University 2020. Duration Time: 1 October 2019 - 30 September 2020.
- 2.2.46. Project Leader: Moisture Sorption Isotherms and Prediction Models of Carboxymethyl Chitosan Films from Different Sources with Various Plasticizers (2019)
- 2.2.47. Project Leader: Utilization of carboxymethyl cellulose from durian rind agricultural waste to improve physical properties and stability of rice starch-based film (2019)
- 2.2.48. Project Leader: Biodegradable rice starch/carboxymethyl chitosan films with added propolis extract for potential use as active food packaging (2017-2018)
- 2.2.49. Project Leader: Effects of zinc oxide nanoparticles on the properties of pectin/alginate edible films (2017-2018)
- 2.2.50. Project Leader: “Improvement of mechanical properties and thermal stability and extension of biodegradability of rice starch-based film with carboxymethyl chitosan (2017-2018)

- 2.2.51. Project Coordinator: Production of Deodorant from Sodium Carboxymethyl Chitosan Mixed with Mangosteen Tannin (2017)
- 2.2.52. Project Coordinator: Modification of Water-Soluble Chitosan for Skin Care Cosmetic (2015-2016) Funding Agency: National Research Council of Thailand (NRCT). Funding 922,000 Bath.
- 2.2.53. Project Advisor: Development of Antioxidative Biocomposite Film from Rice Starch and Carbohydrate Derivative Incorporated with Bee Products (The Royal Golden Jubilee) (2013-2015)
- 2.2.54. Project Mentor: Production and properties determination of carboxymethyl cellulose (CMC) from pineapple peel and pulp (*Ananas comosus* L. Merr) Smooth Cayenne Cultivar (2013-2014)
- 2.2.55. Project Coordinator: Research and Development Project of Materials for Bioscience and Medical Applications (2012-2013)
- 2.2.56. Project Coordinator: Value creation and values-added to tamarind seed (2012-2013)
- 2.2.57. Project Coordinator: Shelf-life extension of fresh-cut jackfruits with edible coating film having the composition of carboxymethyl cellulose from the wasted bottom end of asparagus from the farm (2012-2013)
- 2.2.58. Project Coordinator: Development of edible coating film for fresh-cut durian having the composite of carboxymethyl cellulose from durian husk (2012-2013)
- 2.2.59. Project Advisor: Development of mixed pH-dye-based indicator for monitoring the ripening of mango fruit (*Mangifera indica* cv. Namdokmai-Sitong) (Higher Education Commission) (2008-2012)
- 2.2.60. Project Leader: Development of soy protein isolate-based film with carboxymethyl cellulose and nanoclay (2011-2012)
- 2.2.61. Project Coordinator: Synthesis and Characterization of Sodium Carboxymethyl Chitosan (SCM-Chitosan) Film for Tablet Film-Coating Agent. Funding Agency: Annual Government Statement of Expenditure

2011. Funding 299,172 Bath. Duration Time: 1 October 2011- 30 September 2012.
- 2.2.62. Project Coordinator: Synthesis and Characterization of Sodium Carboxymethyl Chitosan (SCM-Chitosan) Film for Tablet Film-Coating Agent. Funding Agency: Annual Government Statement of Expenditure 2010. Funding 800,000 Bath. Duration Time: 1 October 2010- 30 September 2011.
- 2.2.63. Project Leader: Development of Intelligent Packaging Ripeness Indicator for Monitoring Ripeness for Exported Mango (2010-2011)
- 2.2.64. Project Leader: Influence of oleic acid and carboxymethyl chitosan on mechanical properties and water vapor permeability characteristics of soy protein film (2009-2010)
- 2.2.65. Project Coordinator: Use of Polymer Composite Packaging Film to Maintain Quality and Extend Shelf Life of Thai vegetables and fruits (2009-2010)
- 2.2.66. Project Leader: Synthesis of Carboxymethyl Cellulose from *Mimosa Pigra* Peel (2008-2010)
- 2.2.67. Project Leader: Effects of Modified Atmosphere Packaging on Postharvest Quality of Longan cv. Daw
- 2.2.68. Project Coordinator: Improvement of Water Resistance and Moisture of Polylactic Acid Film with Plasma (2009)
- 2.2.69. Project Coordinator: Effect of Equilibrium Modified Atmosphere Packaging on Shelf Life of Minimally Processed Sweet Bamboo Shoot cv. *Dendrocalamus Latiflorus* Munro (2008-2009)
- 2.2.70. Project Coordinator: Development of Fermented Local Soybean of Northern Thailand for International Market Standard (2008-2009)
- 2.2.71. Project Leader: Value Added of Durian Husks: Synthesis of Carboxymethyl Cellulose from Durian Husk (2008-2009)
- 2.2.72. Project Leader: Improvement of Biodegradable Film by Plasma Immersion technique (2008)

- 2.2.73. Project Leader: DLC Film Synthesis for Improvement Quality of Packaging Film (2008)
- 2.2.74. Project Leader: Application of Active Film in Packaging Lychee: Effect of Plastic Packaging Film on Postharvest Quality of Lychee (2008)
- 2.2.75. Project Leader: Application of Active Film in Packaging Strawberry: Effect of Plastic Packaging Film on Postharvest Quality of Strawberry (2008)
- 2.2.76. Project Leader: Pot from Degradable Tamarind Bark (2008)
- 2.2.77. Project Leader: Production of Carboxymethyl chitosan (CMC) Film and Their Film Properties (2008)
- 2.2.78. Project Leader: Development of Active Packaging as Ethylene Absorber for Extending Economic Fruit Storage Life Purpose to Thai Fruit Export (2006-2007)
- 2.2.79. Project Leader: Production of Carboxymethyl Cellulose from Agriculture Waste as Binder in Ceramics (2007)
- 2.2.80. Project Leader: Application of Carboxymethyl Cellulose from Papaya Peel for Fruit Coating (2007)
- 2.2.81. Project Leader: The study of Process and Properties of Composites from Eucalyptus with Ethylene Absorber (2007)
- 2.2.82. Project Leader: Production of Ethylene Absorber from Diatomite (2007)
- 2.2.83. Project Leader: Effect of Bleaching Process on Mechanical Properties of Carboxy Methyl Cellulose from Papaya Peel (2006)
- 2.2.84. Project Leader: Production of Carboxy Methyl Cellulose Film from Waste of Mulberry Paper (2006)
- 2.2.85. Project Leader: Effect of Carboxy Methyl Cellulose from Papaya Peel / Corn Starch Blend Films on Mechanical Properties (2006)
- 2.2.86. Project Leader: Extending Shelf Life of Cargo Rice (Husked rice) by Using Different Packaging and Oxygen Absorber (2006)
- 2.2.87. Project Leader: Effects of Packaging Types and Storage Conditions on Shelf Life of Fresh *Spirulina platensis* (2006)

- 2.2.88. Project Coordinator: Production of Ethylene Absorber for Extending Fruit Storage Life Purpose to Commercial Benefits (2006)
- 2.2.89. Project Leader: Production of Cellulose Derivative Film from Papaya Peel (2005)
- 2.2.90. Project Leader: Antioxidant Released Starch Film (2005-2007)
- 2.2.91. Project Leader: Extending Shelf Life of “Paper Ark” (2005)
- 2.2.92. Project Coordinator: Development of Brand and Identity for Small Enterprise in Chiang Mai (2005)
- 2.2.93. Project Coordinator: Packaging Development for Ready-to-Eat Fermented Fish (2005)

3. Publications and Academic Activities

3.1. Patents

- 3.1.1. **Pornchai Rachtanapun** et al. The process of manufacturing particleboard from coffee grounds, along with the particleboard derived from this procedure Patent application number 1001000193 Patent Number: 877720
- 3.1.2. **Pornchai Rachtanapun** et al. Enhancing the water resistance of corrugated cardboard through surface treatment using plasma technology. Patent application number 1001000122 **Patent Number:** 87989
- 3.1.3. Dheerawan Boonyawan and **Pornchai Rachtanapun**. Methylcellulose film improvement process to increase water resistance with plasma technology Patent application number 1001000121. Date 6 January 2010 Announcement number 109225. Date 13 July 2011 Patent Number: 75522. Issue Date 27 March 2020

3.2. Books

International Book Chapter

- 3.2.1. **Rachtanapun, P.**, Rachtanapun, C., Jantrawut, P., Thanakkasaranee, S., Kasi, G., Tantala, J., Panraksa, P., & Chaiwarit, T. (2023). Carboxymethyl Chitosan-Based Materials in Packaging, Food, Pharmaceutical, and Cosmetics. *In*

Multifaceted Carboxymethyl Chitosan Derivatives: Properties and Biomedical Applications (pp. 139-203). Springer.

- 3.2.2. **Pornchai Rachtanapun** and Chitsiri Rachtanapun. 2012. Chapter 39 Vacuum Packaging in Da-Wen Sun (Eds.), *Handbook of Frozen Food Processing and Packaging* (2 Edition), New York, Taylor & Francis. 861-873.

National Book and Book Chapter

- 3.2.3. **Pornchai Rachtanapun**. 2009. *Packaging*. Vanida Printing, Chiang Mai, Thailand. 92p.
- 3.2.4. **Pornchai Rachtanapun**. 2008. *Dynamics of Packaging*, Printing Unit, Faculty of Science, Chiang Mai University, Chiang Mai, Thailand.
- 3.2.5. **Pornchai Rachtanapun**. 2005. Chapter 5 How Important of Packaging in *Handbook of Quality Development and Value Added of Local Products*. Editor Somnuk Suchaitanavanich. Traditional Thai Medicine Development Center, Institute of Thai Traditional Medicine, Department for Development of Thai Traditional and Alternative Medicine, Ministry of Public Health. pp. 83-119.
- 3.2.6. **Pornchai Rachtanapun** and Jurmkwan Sungsuwan. 2004. Chapter 6 Innovative Packaging in *Agro-Industry Technology*, editor (Nitiya Rattanapanone and Pirot Wiriyajaree) Faculty of Agro-Industry, Chiang Mai University, pp. 101-118.

3.3. Journal Articles

International Publications in Scopus

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- 3.3.1. Rachtanapun, P., Sawangrat, C., Kanthiya, T., Thipchai, P., Kaewapai, K., Suhr, J., ... & Jantanasakulwong, K. (2024) "Effect of Plasma Treatment on Bamboo Fiber-Reinforced Epoxy Composites" *Polymers*, 16(7), 938.
- 3.3.2. Krasian, T., Punyodom, W., Molloy, R., Topham, P.D., Tighe, B.J., Mahomed, A., Chaiwarit, T., Panraksa, P., **Rachtanapun**, P., Jantanasakulwong, K. and

- Worajittiphon, P. (2024) "Low cytotoxicity, antibacterial property, and curcumin delivery performance of toughness-enhanced electrospun composite membranes based on poly (lactic acid) and MAX phase (Ti_3AlC_2)" *International Journal of Biological Macromolecules*, p.129967.
- 3.3.3. Pasanaphong, K., Pukasamsombut, D., Boonyagul, S., Pengpanich, S., Tawonsawatruk, T., Wilairatanarporn, D., Jantanasakulwong, K., **Rachtanapun, P.**, Hemstapat, R., Wangtueai, S. and Tanadchangsaeng, N. (2024) "Fabrication of Fish Scale-Based Gelatin Methacryloyl for 3D Bioprinting Application", *Polymers* 16, 418.
- 3.3.4. **Rachtanapun, P.**, C. Rachtanapun, P. Jantrawut, S. Thanakkasaranee, G. Kasi, J. Tantala, P. Panraksa, and T. Chaiwarit. (2024) "Carboxymethyl Chitosan-Based Materials in Packaging, Food, Pharmaceutical, and Cosmetics." *In Multifaceted Carboxymethyl Chitosan Derivatives: Properties and Biomedical Applications*, pp. 139-203.
- 3.3.5. Marninphan Thongkham, Aphisit Saenjaiban, Kittisak Jantanasakulwong, Wiwat Pattanawong, Chaiwat Arjin, Surat Hongsibsong, **Pornchai Rachtanapun**, Korawan Sringarm (2024) "New insights from poly-lactic acid and ionomer films coupled with recombinant antibodies for processing sexed-sorting bovine sperm", *International Journal of Biological Macromolecules*, 256, 128425.

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- 3.3.6. Araya Kodsangma, Nanthicha Thajai, Winita Punyodom, Patnarin Worajittiphon, Pensak Jantrawut, Warintorn Ruksiriwanich, Sarana Rose Sommano, Korawan Sringarm, Sarinthip Thanakkasaranee, **Pornchai Rachtanapun**, Kittisak Jantanasakulwong (2023) "Mechanical properties and water resistance improvement of thermoplastic modified starch, carboxymethyl cellulose, and zinc oxide nanometal particles by reactive blending", *International Journal of Biological Macromolecules*, 253, 126783.
- 3.3.7. Vasuphat Tunsound, Tharnthip Krasian, Donraporn Daranarong, Winita Punyodom, Kittisak Jantanasakulwong, Sukunya Ross, Pratchaya Tipduangta,

Pornchai Rachtanapun, Gareth Ross, Pensak Jantrawut, Sittipong Amnuaypanich, Patnarin Worajittiphon (2023) "Enhanced mechanical properties and biocompatibility of bacterial cellulose composite films with inclusion of 2D MoS₂ and helical carbon nanotubes for use as antimicrobial drug carriers", *International Journal of Biological Macromolecules*, 253, 126712.

- 3.3.8. Thidarat Kanthiya, Nanthicha Thajai, Thanongsak Chaiyaso, **Pornchai Rachtanapun**, Sarinthip Thanakkasaree, Anbarasu Kumar, Siwarote Boonrasri, Thorsak Kittikorn, Yuthana Phimolsiripol, Noppol Leksawasdi, Nuttapol Tanadchangsang & Kittisak Jantanasakulwong (2023) "Enhancement in mechanical and antimicrobial properties of epoxidized natural rubber via reactive blending with chlorhexidine gluconate", *Scientific Reports*, 13, 9974.
- 3.3.9. Anuyut Yootoum, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, Churairat Moukamnerd, Thanongsak Chaiyaso, Chayakorn Pumas, Nuttapol Tanadchangsang, Masanori Watanabe, Toshiaki Fukui, and Chayatip Insomphun (2023) "Characterization of newly isolated thermotolerant bacterium *Cupriavidus* sp. CB15 from composting and its ability to produce polyhydroxyalkanoate from glycerol", *Microbial Cell Factories*, 22(1), 68.
- 3.3.10. Nunta, R., Techapun, C., Sommanee, S., Mahakuntha, C., Porninta, K., Punyodom, W., Phimolsiripol, Y., **Rachtanapun, P.**, Wang, W., Zhuang, X. and Qi, W. (2023) "Valorization of rice straw, sugarcane bagasse and sweet sorghum bagasse for the production of bioethanol and phenylacetylcarbinol", *Scientific Reports*, 13(1), 727.
- 3.3.11. Anurak Muangsanguan, Pichchapa Linsaenkart, Tanakarn Chaitep, Juratory Sangta, Sarana Rose Sommano, Korawan Sringarm, Arjin, **Pornchai Rachtanapun**, Kittisak Jantanasakulwong, Yuthana Phimolsiripol Juan M. Castagnini, Warintorn Ruksiriwanich (2023) "Hair Growth Promotion and Anti-

Hair Loss Effects of By-Products Arabica Coffee Pulp Extracts Using Supercritical Fluid Extraction.", *Foods*, 12(22), 4116.

- 3.3.12. Krittameth Kiattipornpithak, **Pornchai Rachtanapun**, Sarinthip Thanakkasaranee, Pensak Jantrawut, Warintorn Ruksiriwanich, Sarana Rose Sommano, Noppol Leksawasdi, Thorsak Kittikorn, and Kittisak Jantanasakulwong (2023) "Bamboo Pulp Toughening Poly (Lactic Acid) Composite Using Reactive Epoxy Resin", *Polymers*, 15, 3789. <https://doi.org/10.3390/polym15183789>.
- 3.3.13. Tanpong Chaiwarit, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, Patnarin Worajittiphon, Nutthapong Kantrong, Pensak Jantrawut (2023) "Surface-Modified Carboxylated Cellulose Nanofiber Hydrogels for Prolonged Release of Polyhexamethylene Biguanide Hydrochloride (PHMB) for Antimicrobial Applications", *Polymers*, 17, 3572.
- 3.3.14. Warinporn Klunklin, Sasina Hinmo, Parichat Thipchai, **Pornchai Rachtanapun*** (2023) "Effect of Bleaching Processes on Physicochemical and Functional Properties of Cellulose and Carboxymethyl Cellulose from Young and Mature Coconut Coir", *Polymers*, 15(16), 3376. <https://doi.org/10.3390/polym15163376>.
- 3.3.15. Siwarote Boonrasri, Parichat Thipchai, Pongdhorn Sae-Oui, Sarinthip Thanakkasaranee, Kittisak Jantanasakulwong, **Pornchai Rachtanapun*** (2023) "Property Improvements of Silica-Filled Styrene Butadiene Rubber/Butadiene Rubber Blend Incorporated with Fatty-Acid-Containing Palm Oil", *Polymers*, 15(16), 3429. <https://doi.org/10.3390/polym15163429>.
- 3.3.16. Nanthicha Thajai, **Pornchai Rachtanapun**, Sarinthip Thanakkasaranee, Winita Punyodom, Patnarin Worajittiphon, Yuthana Phimolsiripol, Noppol Leksawasdi, Sukunya Ross, Pensak Jantrawut, Kittisak Jantanasakulwong (2023) "Reactive Blending of Modified Thermoplastic Starch Chlorhexidine Gluconate and Poly(butylene succinate) Blending with Epoxy Compatibilizer", *Polymers*, 15, 3487. <https://doi.org/10.3390/polym15163487>.

- 3.3.17. Vasuphat Tunsound, Tharnthip Krasian, Donraporn Daranarong, Kittisak Jantanasakulwong, Winita Punyodom, Montira Sriyai, Runglawan Somsunan, Kiattikhun Manokruang, **Pornchai Rachtanapun**, Pratchaya Tipduangta, Yottha Srithep, Sittipong Amnuaypanich, Alan B Dalton, Patnarin Worajittiphon (2023) "Ethyl cellulose composite membranes containing a 2D material (MoS₂) and helical carbon nanotubes for efficient solar steam generation and desalination", *International Journal of Biological Macromolecules*, 125390.
- 3.3.18. Kittaporn Ngiewngam, Sinchai Chinvorarat, **Pornchai Rachtanapun**, Rafael Auras, Thawien Wittaya, Wirongrong Tongdeesoontorn (2023) "Effect of Chemical and Steam Explosion Pulping on the Physical and Mechanical Properties of Sugarcane Straw Pulp Trays", *Polymers*, 15, 3132. <https://doi.org/10.3390/polym15143132>.
- 3.3.19. Patnarin Worajittiphon, Natchanate Santiwongsathit, Shu-Lin Bai, Donraporn Daranarong, Winita Punyodom, Montira Sriyai, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, Sukunya Ross, Pratchaya Tipduangta, Yottha Srithep, Sittipong Amnuaypanich (2023) "Carboxymethyl cellulose/poly(vinyl alcohol) blended films reinforced by buckypapers of carbon nanotubes and 2D material (MoS₂): Enhancing mechanical strength, toughness, and barrier properties", *International Journal of Biological Macromolecules*, 242,124726.
- 3.3.20. Kasi, G., Thanakkasaranee, S., Seesuriyachan, P., **Rachtanapun, P.*** (2023) "One-pot synthesis of gold nanoparticles using Pandanus amaryllifolius leaf extract and their antibacterial, antioxidant, anticancer, and ecotoxicity assessment", *Biocatalysis and Agricultural Biotechnology*, 50, 102695.
- 3.3.21. Auengploy Chailangka, Noppol Leksawasdi, Phisit Seesuriyachan, Warintorn Ruksiriwanich, Sarana Rose Sommano, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, Juan Manuel Castagnini, Francisco J Barba, Yuthana Phimolsiripol (2023) "Improving vitamin D stability and antioxidant activity in imitation mozzarella cheese by conjugated cricket protein with fructooligosaccharide", *LWT*, 183, 114898.

- 3.3.22. Parichat Thipchai, Winita Punyodom, Kittisak Jantanasakulwong, Sarinthip Thanakkasaranee, Sasina Hinmo, Kanticha Pratinthong, Gopinath Kasi, **Pornchai Rachtanapun*** (2023) "Preparation and Characterization of Cellulose Nanocrystals from Bamboos and Their Application in Cassava Starch-Based Film", *Polymers*, 15(12), 2622. <https://doi.org/10.3390/polym15122622>.
- 3.3.23. Sudarut Nadon, Noppol Leksawasdi, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, Warintorn Ruksiriwanich, Sarana Rose Sommano, Amin Mousavi Khaneghah, Juan M Castagnini, Francisco J Barba, Yuthana Phimolsiripol (2023) "Antioxidant and Antimicrobial Properties and GC-MS Chemical Compositions of Makwaen Pepper (*Zanthoxylum myriacanthum*) Extracted Using Supercritical Carbon Dioxide", *Plants*, 12(11), 2211. <https://doi.org/10.3390/plants12112211>.
- 3.3.24. Panraksa, P., **Rachtanapun, P.**, Thipchai, P., Lesniewska, E., Brachais, C.-H., Debeaufort, F., Chambin, O., Jantrawut, P. (2023) "Sustainable 3D printing of oral films with tunable characteristics using CMC-based inks from durian rind w", *European Journal of Pharmaceutics and Biopharmaceutics*, 186, 30-42.
- 3.3.25. Kaewsalud Tanyawat, Kamon Yakul, Chayatip Insomphun, Kittisak Jantanasakulwong, **Pornchai Rachtanapun**, Wanaporn Tapingkae, Santi Chuetor, Masanori Watanabe, and Thanongsak Chaiyaso (2023) "Hydrothermal-enzymatic process for the bio-valorization of keratin wastes by thermostable keratinase from *Thermoactinomyces vulgaris* TK1-21", *Journal of Chemical Technology & Biotechnology*, 98, 1203-1214.
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- 3.3.28. Khantham, C., Ruksiriwanich, W., Sringarm, K., Prom-u-thai, C., Jamjod, S., Arjin, C., Muangsanguan, A., **Rachtanapun, P.**, Jantanasakulwong, K., Phimolsiripol, Y. and Barba, F.J. (2023) "Effects of Bioactive Composition in Oryza sativa L. cv. KDML105 Bran Extract on Gene Expression Related to Hair Cycle in Human Hair Follicle Dermal Papilla Cells", *Agronomy*, 13(2), 295.
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3.4. Proceedings and Abstracts

International Oral Presentation:

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- 3.4.2. Aphisit Saenjaiban, Kittisak Jantanasakulwong, Pisith Singjai, Winita Punyodom, Pornchai Rachtanapun* (2021) Time-Temperature Indicator of Different Biopolymer-Based Films with Polydiacetylene (PDA)/Silver Nanoparticle, The 21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA2020), 23-26 February 2021, The Empress Convention Center, Chiang Mai, Thailand

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- 3.4.4. Aphisit Saenjaiban, Teeranuch Singtisan, Panuwat Suppakul and **Pornchai Rachtanapun*** (2019) "Color Change of Polydiacetylene (PDA)/Silver Nanocomposite Embedded in Carboxymethyl Cellulose (CMC) Film as Time-Temperature Indicator", *The International Polymer Conference of Thailand - PCT-9*, June 13 - 14, 2019, Amari Watergate Hotel, Bangkok, Thailand.
- 3.4.5. Dang Thi Mong Quyen, **Pornchai Rachtanapun*** (2016) "Effects of Antimicrobial Agents-Carbendazim and Vanillin on Chitosan/Methyl Cellulose Films Properties", *The 7th AFOB Regional Symposium - Asian Biotechnology: Research and Application*", January 28-30, 2016, Hue city, Vietnam
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- 3.4.15. (The Most Promising Scientific Work Award) Tanyarut Jinkarn, Suchada Thawornwiriyanan, Dheerawan Boonyawan, **Pornchai Rachtanapun** and Amporn Sane (2011) “Effects of Treatment Time by Sulfur Hexafluoride

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- 3.4.20.Chanokporn Chaiwong, **Pornchai Rachtanapun**, Somrutai Tunma, Rafael Auras, Dheerawan Boonyawan (2010). “Surface Modification and Permeability Analytical Studies of Polylactic Acid-Induced by HMDSO-Plasma”, *Twelfth International Conference on Plasma Surface Engineering*, September 13 - 17, 2010, in Garmisch-Partenkirchen, Germany
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- 3.4.24. **Pornchai Rachtanapun***, Palida Simasatitkul, Wantana Chaiwan and Yaowalak Watthanaworasakun (2009). "Effect of NaOH Concentration on Synthesis and Characterizations of Carboxymethyl Rice Starch", *The Proceedings of The 5th International Conference on Starch Technology (Starch Update 2009)*, September 24-25, 2009, Bangkok, Thailand.
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- 3.4.26. C. Chaiwong, **P. Rachtanapun**, P. Wongchaiya, D. Boonyawan, (2009). "Effect of Plasma Treatment on Hydrophobicity and Barrier Properties of Polylactic Acid", *10th International Workshop on Plasma-Based Ion Implantation & Deposition*, September 7-11, 2009, Brazil.
- 3.4.27. D. Boonyawana, A. Wattananan, and **P. Rachtanapun** (2009). "DLC Coating on Food Packaging Film Using PIII-D Technique", *Proceedings of International Workshop on Plasma Diagnostics and Applications (IWPDA*

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- 3.4.28. W. Tongdeesoontorn, L. Mauer, S. Wongruong and **P. Rachtanapun*** (2009) “Effect of Gelatin and Carboxymethyl Cellulose Concentration and Relative Humidity on Cassava Starch-Based Film Properties” *The Fourth China-Europe Symposium on Processing and Properties of reinforced Polymers*, June 8-12, 2009, Guilin, China.
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- 3.4.31. Vanee Chonhenchob, Sukasem Sittipod, Supoj Pratheepthinthong, **Pornchai Rachtanapun**, and S. Paul Singh (2006). “Measurement and Analysis of Distribution Environment in Thailand: The Case of Produce Distribution”, *Proceedings of 15th IAPRI World Conference on Packaging*, Tokyo Big Sight, Japan.
- 3.4.32. W. Kaewmesri, J. Pumchusak, and **P. Rachtanapun** (2006). “Chloroform-Swollen Softening Effect on Cell Morphology of Polyethylene Foams”, *Proceedings of 22nd Annual Meeting of Polymer Processing Society (PPS-22)*, July 2-6, 2006, Yamagata, Japan.
- 3.4.33. **P. Rachtanapun**, S. E. M. Selke and L. Matuana (2003). “Effect of Melt Index of HDPE on Microcellular foaming of HDPE/PP blends”, *Proceedings of 5th National Graduate Research Polymer Conference*, Lehigh University, Bethlehem, PA, June 22-25, 2003.

- 3.4.34. **P. Rachtanapun**, L. Matuana and S. E. M. Selke (2003) “Cell Morphology and Impact Strength of Microcellular Foamed HDPE/PP Blend”, *Proceedings of SPE ANTEC Papers*, May 4-8, 2003, Nashville, Tennessee.
- 3.4.35. **P. Rachtanapun**, L. Matuana and S. E. M. Selke (2003). “Characterization of Microcellular Foam Polyolefin Blend Composites with Wood Fiber”, *Proceedings of ACS's 225th National Meeting*, March 23-27, 2003 New Orleans.
- 3.4.36. **P. Rachtanapun**, S. E. M. Selke and L. Matuana (2002). “Microcellular Foam of Polymer Blends of HDPE/PP and Their Composites with Wood Fiber”, *Proceedings of WorldPak 2002*, June 23-28, 2002, East Lansing, Michigan, USA.

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- 3.4.37. Nanthicha Thajai, Krittameth Kiatipornthipthak, Thidarat Kanthiya, Pornchai Rachtanapun, Winita Punyodom, Kittisak Jantanasakulwong (2021) “Mechanical and Anti-Microbial Properties of Thermoplastic Starch Blending with Chlohexidine Gluconate, *the 21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA2020)*, 23-26 February 2021, The Empress Convention Center, Chiang Mai, Thailand.
- 3.4.38. **Pornchai Rachtanapun***, Sarinthip Thanakkasaranee, Warinporn Klunklin, Winita Punyodom, Kittisak Jantanasakulwong, Yuthana Phimolsiripol, Pensak Jantrawut, Sarana Rose Sommano, Noppol Leksawasdi, Phisit Seesuriyachan, Thanongsak Chaiyaso, Suphat Phongthai, Alissara Reungsang and Thi Minh Phuong Ngo (2021) “Effect of Chitosan Particle Sizes on Properties of Carboxymethyl Chitosan Powder and Film”, *the 21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA2020)*, 23-26 February 2021, The Empress Convention Center, Chiang Mai, Thailand.

- 3.4.39. Photphroet, Winita Punyodom, Kittisak Jantanasakulwong, Pisith Singjai and **Pornchai Rachtanapun*** (2021) Improvement in Water Resistance Property of Corrugated Medium Paper with Aluminium Wire by Sparking Process, *The 21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA2020)*, 23-26 February 2021, The Empress Convention Center, Chiang Mai, Thailand.
- 3.4.40. Sasina Hinmo, Winita Punyodom, Kittisak Jantanasakulwong, **Pornchai Rachtanapun*** (2021) Improvement of mechanical and barrier properties of carboxymethyl-chitosan film with citric acid as crosslinking agent, *The 21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA2020)*, 23-26 February 2021, The Empress Convention Center, Chiang Mai, Thailand.
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