# CURRICULUM VITAE

**Name:** Assistant Professor Dr. Phatthranit Klinmalai
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## EDUCATION:

| Year | Degree | Field of study | Major | University | Country |
|---|---|---|---|---|---|
| 2011 | B.Sc. (Food Science and Technology) with second class honours | Food Science and Technology | Food Science and Technology | Kasetsart University | Thailand |
| 2014 | M.Sc. (Food Science) | Food Science and Technology | Food Science and Technology | Kasetsart University | Thailand |
| 2017 | Ph.D. (Applied Marine Biosciences) (Japanese scholarship ;Monbukagakusho:MEXT) | Food Science and Technology | Food Science and Technology | Tokyo University of Marine Science and Technology | Japan |

## ADMINISTRATIVE BOARD:

2025-Present Assistant Dean

## ACADEMIC POSITION:

June 2024 – Present **Assistant Professor**
Faculty of Agro-Industry, Chiang Mai University, Thailand

June 2022 – June 2024 **Assistant Professor**
College of Maritime Studies and Management,
Chiang Mai University, Thailand

Aug 2018 – May 2022 **Lecturer**
College of Maritime Studies and Management,
Chiang Mai University, Thailand

## SKILLS AND EXPERTISE:

- Plant-based alternatives
- Protein hydrolysate
- Functional ingredients and foods
- Freezing technology of foods
- Recrystallization of ice crystals in frozen food products
- Utilization of by-products from food industry

## RESEARCH PROJECTS:

| Name of Project | Status | Scholarship | Year |
|---|---|---|---|
| Development of Plant-Based Semi-Moist Dog Soft Chew from Cassava and Pumpkin with Controlled Texture, Structural Integrity, and Stability at Pilot-Scale Production | Head of the Project | Program Management. Unit Competitiveness (PMUC) | 2026-2027 |
| การพัฒนาเครื่องหมายและเครื่องหมายพืชผักและผลไม้ที่มีสารอาหารสำคัญสูงเพื่อการกล่าวอ้างเชิงสุขภาพ | Co-Researcher | สวก. | 2026 |
| ศูนย์รวมผู้เชี่ยวชาญเทคโนโลยีอาหารสมัยใหม่ | Co-Researcher | วช. | 2026 |
| แนวหน้าองค์ความรู้ด้านอาหารอนาคตและบรรจุภัณฑ์อนาคต | Co-Researcher | วช. | 2026 |
| การพัฒนาสารสกัดออกฤทธิ์ทางชีวภาพจากผลคนทีสอทะเล (Vitex Rotundifolia L.f.) ที่มีสมบัติต้านอนุมูลอิสระต้านการอักเสบและกระตุ้นภูมิคุ้มกัน เพื่อผลิตผลิตภัณฑ์เวชสำอางและผลิตภัณฑ์เพื่อสุขภาพ | Co-Researcher | Chiang Mai University | 2026 |
| การขยายขนาดการผลิตและการขอขึ้นทะเบียนขนมขัดฟันสุนัขฟังก์ชันจากโปรตีนพืชเสริมพรีไบโอติกเพื่อบำรุงสุขภาวะช่องปากและทางเดินอาหาร | Co-Researcher | Program Management. Unit Competitiveness (PMUC) | 2026 |
| Innovative Production of High-Value Extracts and Health Food Products: Creating the Future of Food from Sea Lettuce (*Ulva sp.)* | Head of the Project | Chiang Mai University | 2026 |
| Scaling Up Production of Fish Blood Powder as a Palatability Enhancer for Commercial Cat Food | Head of the Project | Program Management. Unit Competitiveness (PMUC) | 2025-2026 |
| Innovation in the value added of waste materials from Phuang Thong Longan, Ban Pheao, into functional ingredients, high-value bioactive ingredients, and biomaterials based on the zero waste concept | Sub-Head of the Project | Chiang Mai University | 2026 |
| Scaling-up functional soft chew to balance gut microbiome in dogs with 3 | Co-Researcher | Program Management. Unit Competitiveness (PMUC) | 2025-2026 |

| Name of Project | Status | Scholarship | Year |
|---|---|---|---|
| synbiotics for product registration | | | |
| Scaling up into pilot production of highly nutritious plant-based milk from edamame to upgrade the technology into commercial production | Head of the Project | Program Management. Unit Competitiveness (PMUC) | 2024-2025 |
| Scaling Up Production and Regulatory Approval of a Functional Dog Dental Chew from Plant-Based Protein for Enhanced Oral and Gut Health | Co-Researcher | Program Management. Unit Competitiveness (PMUC) | 2024-2025 |
| Innovative bioactive compounds from fishery resources and by-products as high value ingredients for functional food production | Sub-Head of the Project | Chiang Mai University | 2025 |
| The value added of coconut by-products for production of high-value bioactive ingredients, functional ingredients, and biomaterials for use in food products and biopolymers | Sub-Head of the Project | Chiang Mai University | 2025 |
| Innovative medical food and beverage products for patients with diabetes and kidney disease | Co-Researcher | Kasetsart University | 2025 |
| Development of Fish Blood Protein Hydrolysate as a Functional ingredient and Cryoprotectant for improving the Quality of Frozen Surimi | Head of the Project | CMU Junior Research Fellowship Program | 2023-2024 |
| Novel Ice Recrystallization Behavior from Fish Blood Protein Hydrolysate with Antioxidant Activity | Head of the Project | Murata Scholarship | 2021-2022 |
| The Application of Polysaccharide from Durian Rind in Frozen Fish Fillet | Head of the Project | CMU Junior Research Fellowship Program | 2020-2021 |
| Effect of ultrasound treatment on phytochemical compounds and biological activity of freeze-dried mango pulp with peel powder | Co-Researcher | Fundamental Fund 2022 | 2022-2023 |

| Name of Project | Status | Scholarship | Year |
|---|---|---|---|
| Innovative Hydroxyapatite extraction from By-products of Marine Product Processing Industries for Biomedical Industries | Co-Researcher | Flagship project 2020 National Research Council of Thailand (NRCT) | 2020-2023 |

## INTERNATIONAL PUBLICATIONS:

- **Klinmalai, P.**, Promhuad, K., Srisa, A., Maliwan, P., & Harnkarnsujarit, N. (2026). Valorization of edamame by protein extraction and fortification of edamame milk: Effects on physicochemical and functional quality. LWT, 119323.
- Srisa, A., Sukatta, U., Sablani, S., **Klinmalai, P.**, & Harnkarnsujarit, N. (2026). Dual-Mode Antimicrobial Sachets: Polyethylene Glycol-Plasticized Polylactic Acid Carriers Loaded with EDTA or Ethyl maltol for Preservation of Packaged Foods. LWT, 119499.
- Vuthisopon, S., Kamonpatana, P., Promhuad, K., Srisa, A., Wongphan, P., Seubsai, A., **Klinmalai, P.** & Harnkarnsujarit, N. (2026). Advances in Functional Pet Food Research: Health-Driven Ingredients, Nutritional Targets and Evidence-Based Claims. Animals, 16(8), 1222.
- Srisa, A., **Klinmalai, P.**, & Harnkarnsujarit, N. (2026). Active biodegradable thermoformed trays from PLA/EDTA with ethyl lauroyl arginate: Thermoformability, migration, and microbial control in processed meats. LWT, 119382.
- Roschhuk, V., Wongphan, P., Laorenza, Y., **Klinmalai, P.**, & Harnkarnsujarit, N. (2026). Influence of Organic Salts on Molecular Interactions, Film Performance, and Antimicrobial Activity of TPS/PBAT Blown Films. Foods, 15(7), 1148.
- Srisa, A., Kamonpatana, P., Promhuad, K., Wongphan, P., Seubsai, A., **Klinmalai, P.**, & Harnkarnsujarit, N. (2026). Plant-Derived Functional Ingredients in Pet Nutrition: Phytochemical Classification, Mechanisms, Efficacy, and Application in Dogs and Cats. Animals: an Open Access Journal from MDPI, 16(7), 1034.
- Yarnpakdee, S., Karnjanapratum, S., **Klinmalai, P.**, & Wangtueai, S. (2026). Preparation of antioxidative agar hydrolysate from *Gracilaria tenuistipitata* using $H_2O_2$ scission to improve surimi gel stability through multiple freeze–thaw cycles. Discover Food
- Roschhuk, V., Laorenza, Y., **Klinmalai, P.**, & Harnkarnsujarit, N. (2026). Active TPS/PBAT Blown Films Incorporating Sodium Lactate for Improved Oxygen Barrier, Antimicrobial Activity, and Cheese Preservation. Foods, 15(4), 763.
- **Klinmalai, P.**, Leelapatarapun, J., Wongphan, P., & Harnkarnsujarit, N. (2025). Enzyme-Loaded Thermoplastic Starch Films Incorporating Papain and Bromelain for Active Meat Tenderization. Future Foods, 100855.
- Kamonpatana, P., **Klinmalai, P.**, Thongpech, A., Sodsai, J., Promhuad, K., Srisa, A., ... & Harnkarnsujarit, N. (2025). Innovative Non-thermal Processing Technologies for Enhancing Pet Food Safety and Quality: A Comprehensive Review of Publications, Patents, and Market Trends. ACS omega.
- **Klinmalai, P.**, Promhuad, K., Srisa, A., Sathawarintu, A., & Harnkarnsujarit, N. (2025). Co-Formulation of Edamame-Based Beverage with Coconut Derivatives Enhances Nutritional Quality, Antioxidant Capacity, Flavor Profile, and Physical Stability. Foods, 14(19), 3321.

- **Klinmalai, P.**, Kamonpatana, P., Sodsai, J., Srisa, A., Promhuad, K., Laorenza, Y., ... & Harnkarnsujarit, N. (2025). Probiotics in Pet Food: A Decade of Research, Patents, and Market Trends. Foods, 14(19), 3307.
- Klunklin, W., Fongin, S., & **Klinmalai, P.** (2025). Investigating the Microstructural and Cryoprotective Superiority of Fructo-Oligosaccharides and Sugar Alcohols for Maintaining Peeled White Shrimp (*Litopenaeus vannamei*) Quality After Repeated Freeze-Thaw Cycles. LWT, 118526.
- Maliwan, P., Wangtueai, S., Yarnpakdee, S., Katekhong, W., & **Klinmalai, P.** (2025). Role of Skipjack Tuna (*Katsuwonus pelamis*) Blood Protein Hydrolysate as a Natural Cryoprotectant on Threadfin Bream Surimi Protein During Repeated Freeze–Thaw Stability. Food and Bioprocess Technology, 1-15.
- Katekhong, W., Surayot, U., You, S., Harnkarnsujarit, N., Fong-in, S., & **Klinmalai, P.** (2025). Development of pectin from durian rind for application as functional ingredient and cryoprotective agent in frozen foods. Food Chemistry Advances, 8, 101104.
- **Klinmalai, P.**, Kamonpatana, P., Sodsai, J., Promhuad, K., Srisa, A., Laorenza, Y., ... & Harnkarnsujarit, N. (2025). Modern palatant strategies in dry and wet pet food: Formulation technologies, patent innovations, and market evolution. Foods, 14(16), 2824.
- Oushapjalaunchai, C., **Klinmalai, P.**, Wongphan, P., & Harnkarnsujarit, N. (2025). Active Edible Films Incorporating Transglutaminase for Firmness Enhancement in Plant-Based Meat Alternatives. Food Bioscience, 107334.
- **Klinmalai, P.**, Kamonpatana, P., Thongpech, A., Sodsai, J., Promhuad, K., Srisa, A., ... & Harnkarnsujarit, N. (2025). Comprehensive Review of Alternative Proteins in Pet Food: Research Publications, Patents, and Product Trends in Plant, Aquatic, Insect, and Cell-Based Sources. Foods, 14(15), 2640.
- **Klinmalai, P.**, Leelapatarapun, J., Wongphan, P., & Harnkarnsujarit, N. (2025). Antibacterial and antifungal activities of protease loaded modified thermoplastic starch blown PBAT films for active packaging. Food Packaging and Shelf Life, 50, 101541.
- **Klinmalai, P**., Manajareansook, P., Charoensiddhi, S., & Katekhong, W. (2024). Freeze-Thaw Stability Regulating Mechanism of Polysaccharide Extracted from Mung Bean Seed Coat on Rice Starch Gel: Retardation of Retrogradation and Ice Crystal Growth. Food and Bioprocess Technology, 1-12.
- Jindapon, N., **Klinmalai, P.**, Surayot, U., Tanadchangsaeng, N., Pichaiaukrit, W., Phimolsiripol, Y., ... & Wangtueai, S. (2023). Preparation, Characterization, and Biological Properties of Hydroxyapatite from Bigeye Snapper (*Priancanthus tayenus*) Bone. International Journal of Molecular Sciences, 24(3), 2776.
- Janpet, C., Manakit, P., **Klinmalai, P.**, Kaewprachu, P., Jaisan, C., Surayot, U., Chakrabandhu, Y., & Wangtueai, S. (2022). Characteristics and functional properties of gelatin and gelatin hydrolysate from bigeye snapper (*Priacanthus tayenus*) bone, Food Research 6 (2), 403 – 412.
- Khwanchai, P., Fong-in, S., & **Klinmalai, P.** (2022). Quality properties of northern Thai beef sausage (sai-ua-nuea) with different additional levels of selected herbs. International Journal of Agricultural Technology, 18(2), 595-608.
- Katekhong, W., Wongphan, P., **Klinmalai, P.**, & Harnkarnsujarit, N. (2022). Thermoplastic starch blown films functionalized by plasticized nitrite blended with PBAT for superior oxygen barrier and active biodegradable meat packaging. Food Chemistry, 374, 131709.

- **Klinmalai, P.**, Fong-In, S., Phongthai, S., & Klunklin, W. (2021). Improving the Quality of Frozen Fillets of Semi-Dried Gourami Fish (Trichogaster pectoralis) by Using Sorbitol and Citric Acid. Foods, 10(11), 2763.
- **Klinmalai, P.**, Srisa, A., Laorenza, Y., Katekhong, W., & Harnkarnsujarit, N. (2021). Antifungal and plasticization effects of carvacrol in biodegradable poly (lactic acid) and poly (butylene adipate terephthalate) blend films for bakery packaging. LWT, 112356.
- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. (2017). Recrystallization of ice crystals in trehalose solution at isothermal condition, Food Biophysics, 12, 404-411.
- **Klinmalai, P.**, Hagiwara, T., Sakiyama, T., & Ratanasumawong, S. (2017). Chitosan effects on physical properties, texture, and microstructure of flat rice noodles. LWT-Food Science and Technology, 76, 117-123.
- Rachatanapun, C., Tantala, J., **Klinmalai, P.**, & Ratanasumawong, S. (2016). Effect of chitosan on Bacillus cereus inhibition and quality of cooked rice during storage. International Journal of Food Science and Technology, 50, 2419-2426.

**INTERNATIONAL CONFERENCES:**

- Maliwan,P. & **Klinmalai, P**. 2024. Role of Skipjack Tuna (Katsuwonus pelamis) Blood Protein Hydrolysate as a Natural Cryoprotectant on Threadfin bream Surimi Protein after Freeze-Thaw Cycles. Food Innovation Asia Conference 2024. BITEC, Bangkok, Thailand. 13-14 June 2024 (Poster presentation)
- **Klinmalai, P.**, Wangteui, S. & Hagiwara, T. Novel Ice Recrystallization Behavior from Tuna (*Katsuwonus pelamis*) Blood Protein Hydrolysate with Antioxidant Activity. The 13th SPSJ International Polymer Conference (IPC2023). Hokkaido, Japan. July 19, 2023. (Oral presentation)
- **Klinmalai, P.**, Jindapon, N., Katekong, W., Wongphan, P., & Harnkarnsujarit, N. 2021. Cryoprotective Effects, Antioxidant Activity, and Characterization of Pectin from Durian Rind (*Durio zibethinus*). The 33rd Annual Meeting of the Thai Society for Biotechnology and International Conference (TSB2021). November 25, 2021. (Oral presentation)
- Chatkitanan, T., **Klinmalai, P**., & Harnkarnsujarit, N. 2020. Improved Color and Quality of Vacuum Meat Products with Starch-Based Active Packaging. In The International Conference on Food and Applied Bioscience 2020 Insights for Research and Industry 4.0. Thailand (Oral presentation)
- **Klinmalai, P**., Harnkarnsujarit, N., & Wangteui, S. 2020. Protein Hydrolysates from Skipjack Tuna (*Katsuwonus pelamis*) Blood: Cryoprotective Effect and Chemical Properties. In The International Conference on Food and Applied Bioscience 2020 Insights for Research and Industry 4.0. (Poster presentation)
- Wongphan, P., **Klinmalai, P.,** & Harnkarnsujarit, N. 2020. Mechanical, Physical and barrier Properties of Edible Starch and Polysaccharide Blend Films Produced by Extrusion. In The International Conference on Food and Applied Bioscience 2020 Insights for Research and Industry 4.0. (Oral presentation)
- Srisa, A., Prukpanukorn, K., Hongloy, S., **Klinmalai, P.**, & Harnkarnsujarit, N. 2019. Development of Antioxidant Edible Pouch for oil Product. In proceeding of The 57th Kasetsart University Annual Conference. 29 January-1 February 2019, Kasetsart University, Bangkok, Thailand. (Oral presentation)
- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. 2017. Dielectric relaxation spectroscopy as a tool for prediction of recrystallization rate of ice crystals in frozen foods. 2017 Joint International Symposium on Food Science and Technology, National University of Singapore, Singapore. 7-8 December 2017 (Oral presentation)

- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. 2016. Influence of trehalose and raffinose on ice recrystallization with various temperatures. Japan Society for Food Engineering 17, Tokyo University of Marine Science and Technology, Tokyo, Japan. 4-5 August 2016 (Oral presentation)
- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. 2016. Predicting ice recrystallization of trehalose solution by using NMR technique in freeze-concentrated matrix at the various temperatures. 9th Joint Symposium on Food Science and Technology among NUS, TUMSAT and HU, Faculty of Fisheries Sciences, Hokkaido University, Hakodate, Japan. 1-2 December 2016 (Oral presentation)
- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. 2016. Recrystallization of ice crystals in trehalose and raffinose solutions. International Symposium on the Properties of Water (ISOPOW), Olympic Museum, Lausanne, Switzerland. 26-29 June 2016 (Oral presentation)
- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. 2015. Recrystallization behavior of ice crystals in various saccharides solutions. Japan Society for Food Engineering 16, Hiroshima University, Hiroshima, Japan. 10-11 August 2015 (Oral presentation)
- **Klinmalai, P.**, Shibata, M., & Hagiwara, T. 2015. Estimation of ice crystals behavior in trehalose and raffinose solutions with the various temperatures. 8th Joint symposium on Food Science and Technology between NUS and TUMSAT, National University of Singapore, Singapore. 3-4 December 2015 (Oral presentation)
- **Klinmalai, P.**, Ratanasumawong, S., Sakiyama, T., & Hagiwara, T. 2013. Effect of chitosan on the physico-chemical properties of rice noodle. Japan Society for Food Engineering 14, Kyoto-terrsa, Kyoto, Japan. 9-10 August 2013 (Oral presentation)
- **Klinmalai, P.**, & Ratanasumawong, S. 2013. Effect of acetic acid on the physicochemical properties of rice flour and the quality of rice noodle. The 51st of Kasetsart University Annual Conference, Kasetsart University, Bangkok, Thailand. 5-7 February 2013 (Poster presentation)
- **Klinmalai, P**., & Ratanasumawong, S. 2012. Effect of chitosan on eating quality of cooked rice. Food Innovation Asia Conference 2012. BITEC, Bangkok, Thailand. 14-15 June 2012 (Poster presentation)