

Curriculum Vitae

Associate Professor Dr. Sutthira Sutthasupa

: Associate Professor in Polymer Science

Affiliation

: Division of Packaging Technology, Chiang Mai University

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Education background

2010 Doctor of Philosophy (Polymer Chemistry), Kyoto University, Japan

2007 Master of Engineering (Polymer Chemistry), Kyoto University, Japan

2004-2005 Research Student (Monbukagakusho Scholarship), Kyoto University, Japan

2004 Bachelor of Science (Packaging Technology) First Class honor, Chiang Mai University, Thailand

Research specialization

-Polymer Chemistry

-Monomer and polymer: design, synthesis and characterization

: Ring-opening metathesis polymerization (ROMP)

: Block copolymers

: Grafted copolymers

: Stimuli-responsive polymers and applications

: Thermo-responsive, pH-responsive polymers

: Supramolecular self-assembly: micelles, vesicles

: Polymer fluorescent chemo sensors

-Synthesis of biomimetic polymers and applications

-Biopolymer based hydrogel sensor for intelligent packaging system

Research Grants

As a Principal Investigator

1. Synthesis and characterization of block copolymers based amino acids functionalized polynorbornene and poly(lactic acid), granted by Chiang Mai University

2. Synthesis, Characterization and Properties Testing of Bio-based scaffolds from Polynorbornene functionalized Amino Acid and Poly(lactic acid), granted by Thailand Research Fund (TRF) (MRG5580130) Year 2012.

3. Amino acid functionalized polynorbornene block copolymers as polymeric micelles for drug carrier application), granted by National Research Council Thailand (NRCT) Year 2013
4. Copolymer based amino acid and lactide functionalized polynorbornene for scaffold preparation with drug loading and release capability, granted by National Research Council Thailand (NRCT), 2015
5. Brush-like copolymers based oligo(lactic acid) stereocomplex and amino acid functionalized polynorbornene: Synthesis, characterization, properties, and stimuli-responsiveness granted by Thailand Research Fund (TRF) (MRG5580130), 2017.
6. Composite gel beads -based alginate, indicators, and agricultural waste and the application for moisture indicator and pesticide adsorbent in packaging system of foods and fresh produce
ทุนวิจัยจาก The Murata Science Foundation 2018.
7. Side chain amino acid-derived stimuli responsive polymeric material by ring opening metathesis polymerization (ROMP) and their applications), granted by National Research Council Thailand (NRCT) 2020, (NRCT5-RSA63004-18).
8. Principal Investigator of a subproject Leader. “Smart Packaging Innovation from bio-based material” Year 1. Fundamental Fund (FF66) provided by Chaing Mai University.
9. Principal Investigator of a subproject Leader. “Smart Packaging Innovation from bio-based material” Year 2. Fundamental Fund (FF67) provided by Chaing Mai University
10. Multifunctional polymer fluorescence chemosensor for dual use in clinical diagnostics and environmental monitoring. Identified Tech to CMU Innovation. 2024 Chaing Mai University
11. Development of polymer hybrid based on amino acid-derived synthetic polymer and carbon nanotubes with fluorescence property for biomedical application. Targeted Research grant, Chiang Mai University, 2023.
12. Principal Investigator of a subproject Leader. “Engineering essential oil-loaded nanocapsules for anti-inflammatory effect against PM2.5” Project title : Development of stimuli-responsive and self-assemble amino acid-derived polynorbornene block copolymers for loading essential oil and In vitro anti-inflammatory activity Fundamental Fund (FF69) provided by Chaing Mai University
13. Fluorescent amino acid-based polymer chemosensor: A versatile platform for detecting environmental toxicants with human health implications, granted by National Research Council Thailand (NRCT) 2026

As Co-Investigator

- 1) การพัฒนาบรรจุภัณฑ์ชีวภาพสำหรับลำไยอบแห้งและการเปรียบเทียบประสิทธิภาพ ของบรรจุภัณฑ์ชีวภาพและบรรจุภัณฑ์ทางการค้า (Development of Bio-plastics Packaging for Dried Litchi and Comparison the Effectiveness of Bio-Packaging and Selected Commercial Packaging) ทุนสนับสนุนจาก สวทช.ภาคเหนือ สำนักงานพัฒนาวิทยาศาสตร์และเทคโนโลยีแห่งชาติ ปี 2555
- 2) การพัฒนาบรรจุภัณฑ์แอคทีฟสำหรับกล้วยหอมและมะม่วงน้ำดอกไม้ ทุนสนับสนุนจาก สำนักงานคณะกรรมการวิจัยแห่งชาติ (วช.) และสำนักงานกองทุนสนับสนุนการวิจัย (สกว.) ปี ทุนวิจัยงบประมาณแผ่นดิน ปี 2558
- 3) พอลิเมอร์แบบเม็ดจากไคโตซานผสมน้ำมันหอมระเหยเพื่อต้านจุลินทรีย์และยืดอายุการเก็บรักษาผลไม้สด: สมบัติและการใช้งาน ทุนวิจัยงบประมาณแผ่นดิน (วช) ปี 2558
- 4) การผลิตกระดาษปรับความชื้นและยับยั้งเชื้อแอนแทรกคโนสเพื่อยืดอายุการเก็บมะม่วงน้ำดอกไม้ ทุนสนับสนุนจากสำนักงานคณะกรรมการวิจัยแห่งชาติ (วช.) และสำนักงานกองทุนสนับสนุนการวิจัย (สกว.) ปี 2560 (RDG60T0108)
- 5) การพัฒนาเม็ดถ่านกัมมันต์ไฮบริดจากชานอ้อยและเถ้าชานอ้อยด้วยวิธีการขึ้นรูปเม็ดแบบหลังและก่อนการสังเคราะห์ถ่านกัมมันต์ที่ผ่านกระบวนการคาร์บอนเซชันและการกระตุ้นด้วยไอน้ำ ทุน MU – KMUTT Biomedical Engineering & Biomaterials Consortium ปี 2564
- 6) การดูดซับของเสียในเครื่องไตเทียมด้วยเม็ดถ่านกัมมันต์ไฮบริดชีวภาพเพื่อนำน้ำยาฟอกเลือดกลับมาใช้ใหม่ ทุน MU – KMUTT Biomedical Engineering & Biomaterials Consortium ปี 2565
- 7) โครงการนวัตกรรมบรรจุภัณฑ์ฉลาดจากวัสดุฐานชีวภาพ ทุน Fundamental fund ปี 2566 (หัวหน้าโครงการวิจัยย่อยที่ 3)
- 8) โครงการนวัตกรรมบรรจุภัณฑ์ฉลาดจากวัสดุฐานชีวภาพ ปีที่ 2 ทุน Fundamental fund ปี 2567 (หัวหน้าโครงการวิจัยย่อยที่ 3)
- 9) วิศวกรรมนาโนแคปซูลที่บรรจุน้ำมันหอมระเหยเพื่อฤทธิ์ด้านการอักเสบอันเกิดจากผลกระทบของ PM2.5 ทุน Fundamental fund ปี 2569 (หัวหน้าโครงการวิจัยย่อยที่ 3 : การพัฒนาพอลิเมอร์สังเคราะห์แบบลึอกจากพอลิเมอร์บอร์นีนที่มีอนุพันธ์ของกรดอะมิโน ที่ตอบสนองต่อสภาวะแวดล้อมและ จัดเรียงโมเลกุลอย่างเป็นระเบียบได้ด้วยตนเอง เพื่อกักเก็บน้ำมันหอมระเหยที่มีฤทธิ์ด้านการอักเสบในระดับหลอดทดลอง (in vitro)

Publications (2021-2025)

1. Vettavong, T; Thepmongkorn, W; Wangngae, S; Thisan, S; Jarisarapurin, W; Kumphune, S; Masrinoul, P; Ruangdachsuwan, S; Inthapat, P; Chotmunkhongsin, C; Weerawut Chaiwat, W*; Sutthasupa, S* MWCNT-Coumarin Hybrids as Fluorescence Sensors for Selective Fe³⁺ Detection: Investigating Roles of MWCNT Characteristics via Synthesis and Functionalization. *Surfaces & Interfaces*. **2026**, 84, 108604.
2. Wangngae, S; Thisan, S; Kumphune, S; Vettavong, T; Thepmongkorn, W; Weerawut Chaiwat, W; Sutthasupa, S*. Selective Fluorescent Sensor Based on Coumarin–Cysteine-Polynorbornene for Sequential Cd²⁺ and Anion Detection. *ACS Appl. Polym. Mater.* **2025**, 21, 14711-14729.
3. Sutthasupa, S*; Wangngae, S; Khunpiluek, T; Thisan, S; Jarisarapurin, W; Kumphune, S; Pankaew, A; Vettavong, T; Thepmongkorn, W; Weerawut Chaiwat, W. Tryptophan-Derived Polynorbornene–Multiwalled Carbon Nanotube Fluorescent Chemosensors for Cu²⁺ Detection and Thiol Discrimination. *ACS Appl. Polym. Mater.* **2025**, 7, 10465-10481.
4. Arpasopana N; Kitpati Boontanon, S; Abdulroman, N; Rasmee, T; Prachakittikul, P; **Sutthasupa, S**; Worasuwannarak, N; Srifa, A; Koo-Amornpattana, W; Klaitong, P; Chaiwat, W. Using alginate-based granular activated carbon hybridized with silica derived from sugarcane bagasse residues for adsorption of uremic toxins in dialysate. *International Journal of Biological Macromolecules*. **2025**, 23, 146957.
5. Inthapat, P; Worasuwannarak, N; Li, X; Yao, H; Sutthasupa, S; Prachakittikul, P; Koo-amornpattana, W; Klaitong, P; t Chaiwat, W. * Adsorption of Methylene Blue Using As-Developed Binderless Hot-Pressed Granular Activated Carbon Derived from Sugarcane Bagasse Residues. *ACS Omega*. **2025**, 10, 34618–34632.
6. Sutthasupa, S*; Thisan, S; Wangngae, S; Pankaew, A; Kumphune, S. The Self-Assembly, Thermoresponsive Properties, and Potential Biomedical Relevance of Proline-Tryptophan Derived Polynorbornene Block Copolymer Micelles. *ACS Omega*. **2025**, 10, 26172–26187.
7. Prachakittikul, P; Inthapat, P; Worasuwannarak, N; Sutthasupa, S; Kitpati Boontanon, S; Srifa, A; Koo-amornpattana, W; Klaitong, P; Chaiwat, W. * Reusable alginate-based

- hybrid granular activated carbon from sugarcane bagasse residues for secondary decolorization of clear liquor in sugar refining. *Results in Engineering*. **2025**, 105664.
8. Wangngae, S; Thisan, S; Kumphune, S; Sutthasupa, S* Multifunctional polymeric fluorescent chemosensor based on coumarin-tryptophan derived polynorbornene for selective detection of Fe³⁺, Cu²⁺, and arginine in biosensing applications. *European Polymer Journal*. **2025**, 222, 113626.
 9. Sutthasupa, S*; Pankaew, A; Thisan, S; Wangngae, S; Kumphune, S; Approaching Tryptophan Tryptophan-Derived Polynorbornene Fluorescent Chemosensors: Synthesis, Characterization, and Sensing Ability for Biomedical Applications as Biomarkers for Detecting Fe²⁺ Ions. *Biomacromolecules* **2024**, 25, 5, 2875-2889
 10. Sutthasupa, S; Wanida Koo-amornpattana, W; Worasuwanarak, N; Prachakittikul, P, Teachawachirasiri, P; Wanthong, W; Thungthong, T; Inthapat, P; Chanamarn, W; Thawonbundit, C; Srifa, A; Ratchahat, S; Chaiwat, W.* Sugarcane bagasse-derived granular activated carbon hybridized with ash in bio-based alginate/gelatin polymer matrix for methylene blue adsorption. *International journal of of Biological Macromolecules*. **2023**, 253, 127464.
 11. Thanaruenin, P.; Sutthasupa, S.; Kanha, N.; Sangsuwan, J.* Antioxidation effect of alginate beads containing thyme, rosemary or geranium essential oils in lard and coconut oil. *International Journal of Food Science & Technology*. **2022**, 58, 898 – 906.
 12. Sattayapanich, K.; Chaiwat, W.*; Boonmark, S.; Bureekaew, S.; Sutthasupa, S.* Alginate-based hydrogels embedded with ZnO nanoparticles as highly responsive colorimetric oxygen indicators. *New Journal of Chemistry*. **2022**, **46**, 19322-19334.
 13. Sutthasupa, S.*; Padugkit, C.; Suriyong, S. Colorimetric ammonia (NH₃) sensor based on an alginate-methylcellulose blend hydrogel and the potential opportunity for the development of a minced pork spoilage indicator. *Food Chemistry*. **2021**, 362, 130151.

Publications (2006-2019)

14. Sutthasupa, S.*; Faungnawakij, K.; Wagener, K. B.; Sanda, F. Thermo-responsive micelles prepared from brush-like block copolymers of proline- and oligo(lactide)-functionalized norbornenes. *Polymer* **2019**, 177, 178–188.
15. Sangsuwan, J.; Sutthasupa, S.* Effect of chitosan and alginate beads incorporated with lavender, clove essential oils, and vanillin against *Botrytis cinerea* and their application in fresh table grapes packaging system. *Packag. Technol Sci*. **2019**, 32, 595–605.

16. Sutthasupa, S*.; Sanda, F. Macroporous scaffolds: Molecular brushes based on oligo(lactic acid)–amino acid–indomethacin conjugated poly(norbornene)s. *Eur. Polym. J.* **2018**, *98*, 162–171.
17. Sutthasupa, S*.; Sanda, F. Synthesis of diblock copolymers of indomethacin/aspartic acid conjugated norbornenes and characterization of their self assembled nanostructures as drug carriers. *Eur. Polym. J.* **2016**, *85*, 211–224.
18. Sangsuwan, J*.; Pongsapakworawat, T.; Bangmo, P.; Sutthasupa, S. Effect of chitosan beads incorporated with lavender or red thyme essential oils in inhibiting *Botrytis cinerea* and their application in strawberry packaging system. *LWT. Food. Sci. Tech.* **2016**, *74*, 14–20.
19. Sutthasupa, S*.; Sanda, F.; Faungnawakij, K.; Meepowpan, P. Synthesis and copolymerization of oligo(lactic acid) derived norbornene macromonomers with amino acid derived norbornene monomer: formation of the 3D macroporous scaffold. *J. Polym. Sci., Part A: Polym. Chem.* **2015**, *53*, 1660–1670.
20. Sutthasupa, S.; Shiotsuki, M.; Matsuoka, H.; Sanda, F. Recent advances in ring-opening metathesis polymerization, and application to synthesis of functional materials. *Polymer Journal* **2010**, *42*, 905–915.
21. Sutthasupa, S.; Shiotsuki, M.; Matsuoka, H.; Masuda, T.; Sanda, F. Ring-opening metathesis block copolymerization of amino Acid functionalized norbornene monomers. Effects of solvent and pH on micelle formation. *Macromolecules* **2010**, *43*, 1815–1822.
22. Sutthasupa, S.; Shiotsuki, M.; Masuda, T.; Sanda, F. Alternating ring-opening metathesis copolymerization of amino acid-derived norbornene monomers carrying non-protected carboxy and amino groups based on acid–base Interaction. *J. Am. Chem. Soc.* **2009**, *131*, 10546–10551.
23. Sutthasupa, S.; Sanda, F.; Masuda, T. ROMP of norbornene monomers carrying Non-protected amino groups with ruthenium catalyst. *Macromolecules* **2009**, *42*, 1519–1525.
24. Sutthasupa, S.; Sanda, F.; Masuda, T. Copolymerization of amino acid functionalized norbornene monomers. Synthesis of amphiphilic block copolymers forming reverse micelles" *Macromolecules* **2008**, *41*, 305–311.

25. Sutthasupa, S.; Sanda, F.; Masuda, T. Ring-opening metathesis polymerization of amino acid-functionalized norbornene diamide monomers: polymerization behavior and chiral recognition ability of the polymers. *Macromol. Chem. Phys* **2008**, *209*, 930-937.
26. Sutthasupa, S.; Terada, K.; Sanda, F.; Masuda, T. Ring-opening metathesis polymerization of amino acid-functionalized norbornene diester monomers. *Polymer* **2007**, *48*, 3026–3032.
27. Sutthasupa, S.; Terada, K.; Sanda, F.; Masuda, T. Ring-opening metathesis polymerization of amino acid-functionalized norbornene derivatives" *J. Polym. Sci., Part A: Polym. Chem.* **2006**, *44*, 5337–5343.

Others

- 2014 The distinguished award of the PhD dissertation “Ring-Opening Metathesis Polymerization of Amino Acid Functionalized Norbornene Monomers, and Properties of the Formed Polymers” National Research Council of Thailand (NRCT), Bangkok, Thailand.
- A visiting scholar, Department of Chemistry and Materials Engineering, June 2017, Kansai University, Osaka, Japan.
- ASEA UNINET 1 month staff exchange program, July 2017, Graz University of Technology (TU Graz), Graz, Austria.