

William S. Y. (Sai Yau) WONG

h-index: 25, citations: 2055 (Aug 2026), FWCI: 2.08

P: +61-0449802940 (M, AU)**E:** william.swong@sydney.edu.au**W:** <http://williamsywong.wix.com/bioinspiration>**Nationality:** Singaporean.**Research Interests:** Interfacial Physics and Engineering, Sustainable Chemistry, Soft Matter Physics, Energy-Passive Processes, Machine-Vision Aided Processes, AI-assisted Surface Engineering and Design.**Education and Research Experience**

- 2027-current **The University of Sydney**, Sydney, Australia
Lecturer, School of Chemical and Biomolecular Engineering.
Group leader, Interfacial Chemical Engineering (ICE) Laboratory.
- 2026-2026 **Okinawa Institute of Science and Technology**, Okinawa, Japan.
Staff Scientist. Droplet and Soft Matter Laboratory.
- 2022-2026 **Aalto University**, Helsinki, Finland.
Marie-Curie IF / RCF Research Fellow, Department of Applied Physics.
Host: Prof. Robin Ras.
- 2018-2022 **Max Planck Institute for Polymer Research**, Mainz, Germany.
Marie-Curie ESR Postdoctoral Research Fellow (2019) | Final Year-PhD (2018).
Advisors: Prof. Dr. Doris Vollmer and Prof. Dr. Hans-Jürgen Butt.
- 2014-2018 **Australian National University**, Canberra, Australia.
28/08/2018 **Ph.D.**, Materials Engineering and Applied Physics
(Ph.D. awarded) Dissertation: Super(de)wettability *via* Scalable Hierarchical Surface Texturing
Advisors: Prof. Antonio Tricoli, Dr. Zbigniew Stachurski and Prof. Vincent Craig.
- 2009-2013 **National University of Singapore**, Singapore.
30/06/2013 **B.Eng.**, Chemical Engineering (*1st Class Hons.*).
(B.Eng. awarded) Dissertation: Tough Hybrid Composite Polymers for Anti-Scratch Purposes

Awards and Grant Funding

- 2022 **Emerging Investigator Award, 17th International Conference of IACIS**
• International Association of Colloid and Interface Scientists.
- 2022 **Research Council of Finland (RCF) Research Fellowship**
• **(CI)** 3 years: 450,000 € / 625,000 AUD.
• Topic: Developing Sustainable Surface Chemistries.
- 2022 **Marie Skłodowska-Curie (MSCA) Independent Fellowship (IF)**
• Evaluation: 100/100, Top 1% of all proposals.
• **(CI)** 2 years: 200,000 € / 300,000 AUD.
• Topic: Developing Membraneless Electrolyzers.
- 2018 **Marie Skłodowska-Curie Early-Stage Researcher (ESR) Fellowship**
• **(co-PI)** 3 years: 218,000 € / 327,000 AUD.
• Topic: Enhancing Durability of Liquid-Infused Surfaces.
- 2017 **ANU Discovery Translation Fund 2.0 (DTF238)**
• **(CI)** 6 months: 50k AUD. ARC Linkage Project (ARC LP17, 2018).
• Topic: Developing Liquid Repellent Glass.
- 2016 **“Science as Art” Award, Materials Research Society**
- 2016 **Graduate Student Award (Silver) with Travel Support, Materials Research Society**
- 2016 **Australian National University Media and Outreach Awards**
- 2016 **Treloar Prize for Best Oral Presentation, 36th Australasian Polymer Symposium**
- 2016 **Australian National University Vice-Chancellor’s HDR Travel Grant**
- 2014 **Australian National University Research Scholarship**
• **(PI)** Ph.D. fellowship (4 years): 128k AUD.
- 2014 **Australian National University Higher Degree (Research) Merit Scholarship**

- **(PI)** Fee waiver (4 years): 184k AUD.
- 2013 **National University of Singapore Outstanding Undergraduate Researcher Prize**
- One of two awardees, Department of Engineering (> 1000 students).
- 2013 **Faculty of Engineering High Achievement Award (Innovation & Research)**
- Best project selected from the class of 2012/2013, ChBE (300 students).
- 2011/12 **National University of Singapore Faculty of Engineering Dean's List**

Teaching Experience, Research Supervision, and Professional Duties

Teaching Experience:

1. **Lecturer:** Co-lecturer of Soft Matter Physics, Topic: Wetting, Surfactants, Sustainable Chemistry, and Biomimetics, 30 students (M.Sc. and Ph.D. level, Aalto University, 80 hours). **Duties:** Designed topic, lectured, and planned out lab session on pairing imaging and computational analysis (PHYS-E0422). **Course grading:** 4.6/5.
2. **Lecturer:** Guest lecturer of Surface Chemistry, Topic: Surface Thermodynamics, 70 students (B.Sc. level, Aalto University, 35 hours). **Duties:** Designed topic, lectured, and provided in-class demonstrations (CHEM-C2230).
3. **Course Tutor:** Physics of Interfaces, 15 students (M.Sc. level, Johannes Gutenberg University, 20 hours). **Duties:** Assisted in course curriculum and in-class experimental designs, primarily in the topic of surface tension.

Research Supervision:

Summary: Postdoctoral researchers: **3**. Ph.D. students (w/ co-supervision): **9**. M.Sc. students: **2**. B.Sc./B.Eng. students: **8**. Breakdown: Aalto University, 3 Ph.D., 1 M.Sc., and 3 postdoctoral researchers; Max Planck Institute, 1 M.Sc., 3 Ph.D. (internal) + 3 Ph.D. (external) students; Australian National University, 6 B.Eng. students; National University of Singapore, 2 B.Eng. students.

Reviewer Duties (83 manuscripts total: *indicates multiple):

Nature, Joule*, Advanced Functional Materials*, ACS Nano*, Advanced Science*, Nature Communications*, Science Advances, Chemical Engineering Journal, Chemical Engineering Science, Communications Chemistry, Materials Horizon*, Journal of Materials Chemistry A*, Journal of Colloid and Interface Science, Colloids and Surfaces A*, ACS Sustainable Chemistry & Engineering, ACS Applied Materials & Interfaces*, Langmuir*, RSC Advances*, Soft Matter*, Scientific Reports*, Advanced Materials Interfaces*, Surfaces and Interfaces*, Physical Review Fluids, Cell Physical Reports, Droplets*, Polymer Bulletin, npj Materials Sustainability, Journal of Environmental Chemical Engineering, Advanced Industrial and Engineering Polymer Research, ACS Omega, Journal of Sol-Gel Science and Technology, Coatings*.

Conference Organization/Assistance:

1. **Liquid Matter Conference**, Mainz, Germany. Sep 2024.
 - Primary chair of session: "Liquid matter for energy and environment".
2. **Hereaus Seminar**, Bad Honnef, Germany. Apr 2019.
 - Reviewed abstracts and determined suitability for poster/oral presentation.
3. **Zsigmondy Colloquium of the German Colloid Society**, Mainz, Germany. Apr 2018.
 - Reviewed abstracts and determined suitability for poster/oral presentation.
 - Session chair for plenary and symposium sessions and organized a tour.

Conference Presentations (Invited only)

1. (Oral, Invited) 3D Bubble and Foam Absorbers: Designing Membrane-Free Electrolyzer Cells. **Micro and Nano Flows Conference 2025**, Edinburgh, United Kingdom, Sep 2025.
2. (Oral, Invited) Understanding Surface-Induced Bubble Coalescence and Absorption. **International Youth Conference of Bionic Science and Engineering 2024**, Nanjing, China, Sep 2024.

3. (Oral, Invited) Designing and Understanding the Limits of Fluoro-Free Super Liquid Repellency. **International Symposium on Superwettability⁺**, Singapore, Jan 2024.
4. (Oral, Invited) Popping Bubbles: Surface-Enhanced Foam Control. **N.I.C.E. (Nature Inspires Creativity Engineers) Winter Conference**, Nice, France. Dec 2022.
5. (Oral, Invited) Popping Bubbles: Surface-Enhanced Foam Control. **International Association of Colloid and Interface Scientists (IACIS)**, Queensland, Australia. June 2022.
6. (Oral, Invited) Cryofouling Avoidance in Antarctic Scallops. **Materials Research Society (MRS) Fall Meeting and Exhibit**, Boston, Massachusetts, USA. Dec 2021.
7. (Oral, Invited) Capillary Balancing: Designing Frost-Resistant Lubricant-Infused Surfaces. **Materials Research Society (MRS) Fall Meeting and Exhibit**, Boston, Massachusetts, USA. Dec 2021.
8. (Oral, Invited) Epidermis-Inspired Structurally Robust Superhydrophobicity. **The Oil and Colour Chemists' Association (OCCA) National AGM 2018**, Leeds, United Kingdom. Sep 2018.
9. (Oral, Invited) Special Talks Session: Wettability: From Liquid-Repellency to Self-Assembly. **Materials Research Society (MRS) Fall Meeting and Exhibit**, Boston, Massachusetts, USA. Dec 2016.

University Seminars (Invited only)

1. Interfacial Engineering: Next Frontier for Process Engineering. **Imperial College**, London, Jan 2026.
2. Bubble and Foam Management: Fundamental to Applied Principles. **GTIT/Technion**, Nov 2025.
3. Microstructuring for Passive Anti-Foaming. **Chalmers University**, Gothenburg, Sep 2024.
4. Ultra-smooth Perfluoroalkyl Surfaces *via* CVD Control. **KAUST**, Thuwal, April 2024.
5. Surface Chemistry in Enabling Liquid Repellency. **Durham University**, Durham, July 2023.
6. Surface Chemistry for Tuning Triboelectrification. **Sydney University**, Sydney, July 2022.
7. Surface Engineering Enhanced Foam Control. **Macquarie University**, Sydney, July 2022.
8. Enabling Fluoro-Free Liquid Repellency. **Nanyang Technological University**, Singapore, July 2021.
9. Capillary-Balancing: Frost Resistant Surfaces. **University of British Columbia**, Vancouver, Jan 2021.

Patents

1. US Patent ID: US11566148B2, **Wong, W. S. Y.**, Stachurski Z. H., Nisbet D. R., and Tricoli, A. Durable and Transparent Self-Cleaning Surfaces through Hierarchical Interpenetrated Polymer Networks.
2. US Patent ID: US10851260B2, Hong, L., Tay, S. W., and **Wong, W. S. Y.** Anti-Scratch Coating Composed of Two Interlocked Hybrid Polymer Networks with Chain-To-Particle Connection.
3. WIPO Patent ID: WO/2016/149735, **Wong, W. S. Y.**, Craig, V. S. J., and Tricoli, A., Highly Adhesive Superhydrophobicity and the Ideal Rose Petal Effect.

Industrial Consulting:

1. Nanostratus (Australia): Co-founder and Technological Consultant for Surface Engineering.
2. Amphico (United Kingdom): Fluoro-free and Sustainable Surfaces for Waterproofed Textiles.
3. AB InBev (Belgium): Anti-foaming Surfaces for Enhanced Beer Processing.
4. Carl Zeiss (Australia): Transparent and Highly Liquid Repellent Surfaces.
5. KRÜSS (Germany): Contact-free Drop Manipulation Devices.
6. Hisense (China): Liquid-Repellent Surfaces for Oil Splatter Management.
7. Huawei (China): Anti-Fingerprint Surfaces *via* Heterogenous Surface Texturing.

References: (* Denotes Field-Specific Advisors)

Postdoctoral supervisors (Max Planck Institute for Polymer Research, Mainz, Germany):

1. *Professor Doris Vollmer (E: vollmerd@mpip-mainz.mpg.de, T: +49-0-6131/379-113)
2. *Professor Hans-Jürgen Butt (E: butt@mpip-mainz.mpg.de, T: +49-0-6131-379-111)

Ph.D. supervisors (Australian National University, Canberra, Australia):

3. **Professor Vincent Craig (E: vince.craig@anu.edu.au, T: +61 2 6125 3359)*
4. Professor Antonio Tricoli (E: antonio.tricoli@anu.edu.au, T: +61 2 6125 1696)
5. Dr. Zbigniew Stachurski (E: zbigniew.stachurski@anu.edu.au, T: +61 2 6125 5681)

Full Publication List ([†]first authorship, *corresponding authorship)

Research Articles (peer-reviewed): Publications are largely open-access ([hyperlinks in titles](#)), and are also available on my ResearchGate profile. Publications are listed with the degrees of contribution (minor, at < 50% and major, at ≥ 50%):

1. **Wong, W. S. Y.***, Fu, W., Nallukunnel-Raju, E. M., Koochak, P., Vuckovac, M., Ang, E. H. A., Vollmer, D., and Liu, G. Designing Efficient Membrane-Free Electrolyzers *via* Bubble and Foam Absorbers. **(2026, under Review)**. [Developed a novel membrane-free electrolyzer design incorporating bubble- and foam-absorbing surfaces, significantly enhancing gas separation and ionic transport for energy-efficient hydrogen production.](#) Contribution: Experimental design (major), analytics (major), and theory (major).
2. Koochak, P., Liu, K., and **Wong, W. S. Y.*** Rolling and Impacting Caustic Drops: In Situ Force and Energy Monitoring of Surface Degradation. *Advanced Functional Materials* **2026**, 36, e27264. [Established a methodology to quantify real-time forces and energy dissipation during caustic liquid impact on reactive surfaces, revealing mechanistic insights into surface degradation and durability.](#) Contribution: Experimental design (major), analytics (major), and theory (major).
3. Koochak, P., Lin, M., Afzalifar, A., Hashemi, A., Arunachalam, S., Shoaib, A., Turkki, V., Ala-Nissila, T., Daniel, D., Vuckovac, M., and **Wong, W. S. Y.*** Self-Accelerating Drops on Silicone-Based Super Liquid Repellent Surfaces. *ACS Nano* **2025**, 19, 23105. [Described the sustainable design of next-generation superhydrophobic surfaces with surface charge suppression properties, leading to rapidly moving liquid drops exhibiting highly unique mobility-charge dynamics.](#) Contribution: Experimental design (major), analytics (major), and theory (major).
4. Fauconnier, M., Karunakaran, B., Drago-González, A., **Wong, W. S. Y.**, Ras, R. H. A., and Nieminen H. J. Fast Capillary Waves on an Underwater Superhydrophobic Surface. *Nature Communications* **2025**, 16, 1568. [Described the behavior of how ultrasound interacts with an underwater superhydrophobic surface, of which pinned contact lines of a plastron generates much faster capillary wave motions.](#) Contribution: Experimental design (minor) and theory (minor).
5. Koochak, P., Kiseleva, M. S., Lepikko, S., Latikka, M., Ras, R. H. A., and **Wong, W. S. Y.*** Smoothing Perfluoroalkylated Surfaces: Liquid-Like despite Molecular Rigidity? *Advanced Materials Interfaces* **2024**, 2400619. [Designed and tuned the use of controlled / ambient moisture exposure for modifying molecular-level smoothness of molecular surfaces that are known for inherent roughness. Showcased the use of such surfaces for tuning condensation / heat transfer applications.](#) Contribution: Experimental design (major), analytics (major), and theory (major).
6. Ma, J., Zhang, C., **Wong, W. S. Y.***, and Song, J.* Facile, Scalable and Substrate-Independent Omnipophobic Surface. *Applied Surface Science* **2024**, 682, 161726. [Designed an omniphobic surface that is independent of substrate, ambient self-curing, and durable under harsh exposure conditions.](#) Contribution: Experimental design (minor), analytics (major).
7. Naga, A., Rennick, M., Hauer, L., **Wong, W. S. Y.**, Vollmer, D., and Kusumaatmaja, H. Direct Visualization of Viscous Dissipation and Wetting Ridge Geometry on Lubricant-Infused Surfaces. *Communications Physics* **2024**, 7, 306. [Described the impact of location-dependent viscous dissipation under a drop moving on a lubricant-infused surface.](#) Contribution: Experimental (minor) and theory (minor).
8. Hauer, L., Naga, A., Rodrique, Badr., Pham, Jonathan T., **Wong, W. S. Y.**, and Vollmer, D. Wetting on Silicone Surfaces. *Soft Matter* **2024**, 20, 5273. [Reviewed the state-of-the-art understanding of silicone-based surfaces and their wetting behaviors. These surfaces are set to replace the use of unsustainable fluorinated materials for liquid management in the 21st century.](#) Contribution: Literature review on characterization methods and self-assembled PDMS-based SOCALs (major).
9. **Wong, W. S. Y.***, Naga, A., Neef, Tobias, Karunakaran, B., Poulidakos, D., and Ras R. H. A. Designing Plastrons for Underwater Bubble Capture: From Model Microstructures to Stochastic Nanostructures. *Advanced Science* **2024**, 11, 2403366. [Designed plastrons using model microstructures for investigating principles in underwater bubble capture, including the onset of rupture and subsequent absorption. Defined core design principles for enabling rapid bubble](#)

- capture and illustrated why nano-structuring still dominates the state-of-the-art. Contribution: Experimental design (major), analytics (major), and theory (major).
10. Drago-González, A., Fauconnier, M., Karunakaran, B., **Wong, W. S. Y.**, Ras R. H. A., and Nieminen H. J. Ultrasonic Healing of Plastrons. *Advanced Science* **2024**, *11*, 2403028. Described how ultrasound is used as a non-invasive and rapid tool for the recovering the Cassie-Baxter state from a completely wetted Wenzel state. Demonstrated non-contact bubble manipulation. Contribution: Experimental design (minor), analytics (minor), and theory (minor).
 11. **Wong, W. S. Y.***, Kiseleva M. S., and Naga, A. Polarity-Induced Reactive Wetting: Spreading and Retracting Sessile Water Drops. *Langmuir* **2024**, *40*, 13562. Designed a surface that is capable of autophobic dewetting *via* the use of polarity-induced reactive wetting principles. Contribution: Experimental design (major), analytics (major), and theory (major).
 12. **Wong, W. S. Y.***, Kiseleva M. S., Zhou S., Junaid M., Pitkänen L., and Ras R. H. A.* Design of Fluoro-Free Surfaces Super-Repellent to Low-Surface-Tension Liquids. *Advanced Materials* **2023**, *35*, 2300306. Designed and tuned theoretical-to-empirical phase diagrams that shows and predicts how low surface tension aqueous based liquids can be easily repelled from nanostructured surfaces without the use of environmentally-pollutive fluoroalkylated materials. Contribution: Experimental design (major), analytics (major), and theory (major).
 13. **Wong, W. S. Y.***, Bista, P., Li, X., Veith, L., Sharifi-Aghili, A., Weber, S. A. L. and Butt, H-J.* Tuning the Charge of Sliding Water Drops. *Langmuir* **2022**, *38*, 6224. Designed and tuned the surface chemistry of surfaces to induce dynamic (positive and negative) and adaptive (positive-to-negative, and reversible) drop slide charging. Contribution: Experimental design (major), analytics (major), and theory (major).
 14. **Wong, W. S. Y.**, Hauer, L., Cziko, P. and Meister, K. Cryofouling avoidance in the Antarctic Scallops *Adamussium colbecki*. *Communications Biology* **2022**, *5*, 83. Described the biological origin behind underwater anti-icing properties of the Antarctic Scallop in a supercooled underwater environment, providing future roadmaps for the design of next-generation submerged anti-icing surfaces. Contribution: Experimental design (major), analytics (major), and theory (major).
 15. Wang, W., Gu, W., Liu, P., Liu, J., Wang X., Liu J., Yu X.*, **Wong, W. S. Y.*** and Zhang, Y.* Heterogeneously-wetting glass with enhanced anti-fingerprint properties. *Chemical Engineering Journal* **2021**, *430*, 132902. Designed next-generation anti-fingerprint surfaces, inspired by the stenocara beetle's shell's unique micromorphology. Contribution: Experimental design (minor), analytics (major), and theory (major).
 16. **Wong, W. S. Y.*** and Vollmer, D.* Effervescence-Inspired Self-Healing Plastrons for Long-Term Immersion Stability. *Advanced Functional Materials* **2021**, *32*, 2107831. Designed self-healing plastrons in submerged surfaces *via* on-demand triggering of effervescence reactions for long-term immersion stability. Contribution: Experimental design (major), analytics (major), and theory (major).
 17. Hauer, L., **Wong, W. S. Y.**, Sharifi-Aghili, A., Kondic, L. and Vollmer, D.* Frost Spreading and Pattern Formation on Microstructured Surfaces. *Physical Review E* **2021**, *104*, 044901. Described the behavior of frost growth and propagation on structured surfaces under varying environmental exposure. Contribution: Experimental design (major), experiments (minor), analytics (minor).
 18. **Wong, W. S. Y.***, Naga, A., Hauer, L., Baumli, P., Bauer, H., Hegner, K. I., D'Acunzi, M., Kaltbeitzel, A., Butt, H-J. and Vollmer, D.* Super Liquid Repellent Surfaces for Anti-Foaming and Froth Management. *Nature Communications* **2021**, *12*, 5358. Designed super-liquid-repellent surfaces that are demonstrated for energetically passive anti-foaming. Contribution: Experimental design (major), analytics (major), and theory (major).
 19. Liu, G., **Wong, W. S. Y.**, Kraft, M., Ager, J. W., Vollmer, D. and Xu, R. Wetting-Regulated Gas-Involving (Photo)electrocatalysis: Biomimetics in Energy Conversion. *Chemical Society Reviews* **2021**, *50*, 10674-10699. Reviewed the state-of-the-art in the novel and interdisciplinary field of wettability-electrocatalysis. Contribution: Literature review on wettability and theory (major).
 20. Hegner, K. I., **Wong, W. S. Y.*** and Vollmer, D.* Ultrafast Bubble Bursting by Superamphiphobic Coatings. *Advanced Materials* **2021**, *33*, 2101855. Designed optimal flame spray pyrolysis

- processes for enabling ultra-fast bubble rupturing. Contribution: Experimental design (major), analytics (major), and theory (major).
21. Lowe, A, **Wong, W. S. Y.**, Tsyryn, N., Chorążewski, M., Zaki, A., Geppert-Rybczyńska, M., Stoudenets, V., Tricoli, A., Faik, A. and Grosu, Y. Effect of Surface Entropy on Heat of Non-Wetting Liquid Intrusion into Nanopores. *Langmuir* **2021**, 37, 4827-4835. Described the use of intrusion pressure for energy storage in superdewetting materials (superhydrophobic/superamphiphobic). Contribution: Experimental design (major), analytics (major), and theory (minor).
 22. Hauer, L.[†], **Wong, W. S. Y.**[†], Donadei, V., Hegner, K. I., Kondic, L. and Vollmer, D. How Frost Forms and Grows on Lubricated Surfaces. *ACS Nano* **2021**, 15, 4658-4668. Described how frost formation on lubricant-infused surfaces can induce capillary drainage of lubricants via a propagating frost front. Contribution: Experimental design (major), analytics (major), and theory (major).
 23. Naga, A., Kaltbeitzel, A., **Wong, W. S. Y.**, Butt, H-J. and Vollmer, D. How a Water Drop Removes a Particle from a Hydrophobic Surface. *Soft Matter* **2021**, 17, 1746-1755. Described how solids are typically removed from a hydrophobic surface via contact line dynamics. Contribution: Experimental design (minor), analytics (minor), and theory (minor).
 24. Baumli, P., D'Acunzi, M., Hegner, K. I., Naga, A., **Wong, W. S. Y.**, Butt, H-J. and Vollmer, D. The Challenge of Lubricant-Replenishment on Lubricant-Impregnated Surfaces. *Advances in Colloid and Interface Science* **2020**, 287, 102329. Reviewed the state-of-the-art techniques in fabricating and maintaining functionality of lubricant-infused surfaces under harsh drainage conditions. Contribution: Literature review and theory (minor).
 25. **Wong, W. S. Y.**^{*}, Hegner, K. I., Donadei, V., Hauer, L., Naga, A. and Vollmer, D.^{*} Capillary Balancing: Designing Frost-Resistant Lubricant-Infused Surfaces. *Nano Letters* **2020**, 20, 8508-8515. Designed the use of dense interstitial spacing for enhancing lubricant retention in lubricant-infused surfaces during contact with micro/nano-metric frost. Contribution: Experimental design (major), analytics (major), and theory (major).
 26. Jiao, X., Li, M., Yu, X., **Wong, W. S. Y.**^{*} and Zhang, Y.^{*} Oil-Immersion Stable Superamphiphobic Coatings for Long-term Super Liquid-Repellency. *Chemical Engineering Journal* **2020**, 420, 127606. Designed dense interstitial spacing for long-term oil-immersion stability of superamphiphobic coatings. Contribution: Experimental design (minor), analytics (major), and theory (major).
 27. **Wong, W. S. Y.**, Hauer, L., Naga, A., Kaltbeitzel, A., Baumli, P., D'Acunzi, M., Berger, R., Vollmer, D. and Butt, H-J. Adaptive Wetting of Polydimethylsiloxane. *Langmuir* **2020**, 36, 7236-7245. Described the intriguing phenomenon of wetting-adaptation in common elastomeric PDMS when exposed to water. Contribution: Experimental design (major), analytics (major), and theory (major).
 28. **Wong, W. S. Y.**^{*}, Corrales, T. P., Naga A., Baumli P., Kaltbeitzel A., Kappl M., Papadopoulos P., Vollmer, D. and Butt, H-J.^{*} Microdroplet Contaminants: When and Why Superamphiphobic Surfaces are Not Self-Cleaning. *ACS Nano* **2020**, 14, 3836-3846. Described the length-scales and conditions under which superamphiphobic surfaces remain "self-cleaning". Contribution: Experimental design (major), analytics (major), and theory (major).
 29. **Wong, W. S. Y.**^{*}, Surface Chemistry Enhancements for the Tunable Super Liquid Repellency of Low Surface Tension Liquids. *Nano Letters* **2019**, 19, 1892-1901. Designed and tuned extreme surface chemistry grafting that can achieve functional superamphiphobicity without explicitly re-entrant structures. Contribution: Experimental design (major), analytics (major), and theory (major).
 30. **Wong, W. S. Y.**^{*} and Tricoli, A.^{*}, Cassie-Levitated Droplets for Distortion-Free Low Energy Solid-Liquid Interactions. *ACS Applied Materials and Interfaces* **2018**, 10, 13999-14007. Designed a method to drastically enhance accuracy of dynamic contact angle measurements with low surface tension liquids. Contribution: Experimental design (major), analytics (major), and theory (major).
 31. **Wong, W. S. Y.**, Gengenbach, T., Nguyen, H. T., Gao, X., Craig, V. S. J. and Tricoli, A., Dynamically Gas-Phase Switchable Super(de)Wetting States by Reversible Amphiphilic Functionalization: A Powerful Approach for Smart Fluid Gating Membranes. *Advanced Functional Materials* **2017**, 28, 1704423. Designed a remotely operated gas-phase reversible hydrophobic-to-hydrophilic

- functionalization of porous membranes for energy-passive fluid gating operation. Contribution: Experimental design (major), analytics (major), and theory (major).
32. **Wong, W. S. Y.**, Liu, G. and Tricoli, A., Superamphiphobic Bionic Proboscis for Contamination-Free Manipulation of Nano- and Core-Shell Droplets. *Small* **2017**, *13*, 1603688. [Designed droplet tweezers for nano-/micro-droplet production and manipulation](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 33. **Wong, W. S. Y.**, Liu, G., Nasiri, N., Hao, C., Wang, Z. and Tricoli, A., Omnidirectional Self-Assembly of Transparent Superoleophobic Nanotextures. *ACS Nano* **2016**, *11*, 587-596. [Designed and optimized flame spray pyrolysis processes for achieving explicitly formed re-entrant structures in stochastically assembled superamphiphobic coatings](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 34. **Wong, W. S. Y.**, Li, M., Nisbet, D. R., Craig, V. S. J., Wang, Z. and Tricoli, A., Mimosa Origami: a Nanostructure-enabled Directional Self-Organization Regime of Materials. *Science Advances* **2016**, *2*, e1600417. [Designed energy-passive, self-assembling, self-pumping capillary microchannels by coupling capillarity bending and capillary flow forces](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 35. **Wong, W. S. Y.**, Stachurski Z. H., Nisbet D. R. and Tricoli, A., Ultra-Durable and Transparent Self-Cleaning Surfaces by Large-Scale Self-Assembly of Hierarchical Interpenetrated Polymer Networks. *ACS Applied Materials and Interfaces* **2016**, *8*, 13615-13623. [Designed a sprayable binder from interpenetrated polymer networks for stabilizing fragile nanostructured coatings for highly durable superhydrophobic surfaces](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 36. Vahidi, A. K., Wang, Z., **Wong, W. S. Y.** and Li, Z., Immobilization of O-Acetylserine Sulfhydrylase as Highly Active and Recyclable Nanobiocatalyst: Efficient Synthesis of beta-Pyrazol-1-yl-L-alanine. *Catalysis Science and Technology* **2016**, *6*, 6286-6293. [Designed enzymatically active magnetic nanoparticles via the immobilization of active enzymes for recyclable synthesis of drug precursors](#). Contribution: Experimental design (major), analytics (minor), and theory (minor).
 37. Liu, G., **Wong, W. S. Y.**, Nasiri, N. and Tricoli, A., Ultraporous Superhydrophobic Gas-Permeable Nano-Layers by Scalable Solvent-Free One-Step Self-Assembly. *Nanoscale* **2016**, *8*, 6085-6093. [Designed a fluoro-free, one-step method for synthesizing fractal superhydrophobic surfaces](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 38. **Wong, W. S. Y.**, Gutruf, P., Sriram, S., Bhaskaran, M., Wang Z. and Tricoli, A., Strain Engineering of Wave-like Nanofibers for Dynamically Switchable Adhesive/Repulsive Surfaces. *Advanced Functional Materials* **2016**, *26*, 399-407. [Designed strain-reversible straight-to-wavy nanofibers for achieving tunable sticky hydrophobic to non-adhesive superhydrophobic surfaces](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 39. **Wong, W. S. Y.**, Nasiri, N., Liu, G., Rumsey-Hill, N., Craig, V. S. J., Nisbet, D. R. and Tricoli, A., Flexible Transparent Hierarchical Nanomesh for Rose Petal-Like Droplet Manipulation and Lossless Transfer. *Advanced Materials Interfaces* **2015**, *2*, 1500071. [Designed a drop manipulation system with near-lossless drop transfer capabilities](#). Contribution: Experimental design (major), analytics (major), and theory (major).
 40. **Wong, W. S. Y.**, Nasiri, N., Rodriguez, A. L., Nisbet, D. R. and Tricoli, A., Hierarchical amorphous nanofibers for transparent inherently super-hydrophilic coatings. *Journal of Materials Chemistry A* **2014**, *2*, 15575-15581. [Designed a regime of superhydrophilic titania surfaces that does not rely on UV-activation, but meso- and nano-porosity for enhanced wicking properties](#). Contribution: Experimental design (major), analytics (major), and theory (major).

Book Chapter:

41. **Wong, W. S. Y.*** and Tricoli, A., Multi-Scale Engineering and Scalable Fabrication of Super(de)wetting Coatings. *Advanced Coating Materials* **2018**, Wiley-Scrivener, *13*, 394-457. [Reviewed techniques to realize multiple states of superwettability based on scalable techniques](#). Contribution: Literature review and theory (major).