

Yushan Fellow Program

Performance Report

University and Appointed Faculty: National Taiwan University of Science and Technology Graduate Institute of Applied Science and Technology	Academic Field: Applied Science and Engineering
Name of the Yushan (Young) Fellow: Chung, Tai-Shung	<input checked="" type="checkbox"/> Yushan Fellow <input type="checkbox"/> Yushan Young Fellow

Assessment of effectiveness of tangible work (The implementation results can be presented cumulatively, including the annual performance report of the second year, which can include the results of the first year and the second year)

Main points of assessment	The anticipated goals	Concrete work achievements or results	Supporting documents
1. Chief content of the Yushan (Young) Fellows' research work and overview of full research process.	Promote Taiwan R&D; Publish high impact papers; Provide new research directions, capability, and manpower training.	We have so far published many journal papers (≥ 43), presented data in local and international conferences (≥ 23), set up advanced membrane labs, conducted manpower training and promoted Taiwan.	Appendix 1 Quantitative Assessment Form Appendix 2 Lists of journal publications, invited talks, and conference presentations .

Main points of assessment	The anticipated goals	Concrete work achievements or results	Supporting documents
<p>2. The link between Yushan (Young) Fellows' future research topics and the university's development and the anticipated benefits (including Higher Education SPROUT Project):</p> <p>(1) Fellows' research plan and goals (2) The link between scholars' research content and the university's development (3) Specific work performance or achievements, please include the mid-term progress report of the particular research plan (4) Anticipated goals (including qualitative or quantitative working performance or results)</p> <p>※ If there is a quantitative work achievements, please fill out "Quantitative Assessment Form"</p>	<p>Under Profs. Lai, Hu and Hung leadership, the membrane center at NTUST is growing and receiving local and regional attentions. With the joining of Prof. Chung, we aim to promote NTUST membrane R&D globally. The Yushan program would help the membrane center with advanced equipment and capability for membrane studies, material characterizations, membrane development, and manpower training. In addition to publish high impact journal papers, we aim to bring more impact to increase Taiwan water recycling and CO2 capture, and promote Taiwan R&D.</p>	<p>With the help of Yushan program, we have purchased important equipment such as (1) Zeta potential, (2) goniometer, (3) AFM, (4) optical microscope, (5) spinning machine, (6) syringe pumps, (7) spinnerets, (8) organic solvent nanofiltration, (9) gas chromatography (GC) and (10) the set-up of home-made equipment for membrane distillation and pervaporation. The first three analytic instruments have helped many students and professors in their research. Profs. Hung, Hu, Wang and Tsai, have used these instruments for their publications.</p> <p>In addition, Prof. Chung has published 41 journal papers. He also gave several plenary and keynote lectures in local and regional conferences. He was ranked as (1) the top 0.083% of scholars on Water Purification over the past 10 years, as "World Expert" by Expertscape in 2021, (2) No. 6th in Chemical Engineering worldwide and No 356th in the list of "the top 2% scientists in the world" by Stanford University in 2022 at http://www.globalauthorid.com/WebPortal/EliteOrder (3) No. 79th in the Chemistry field and 110th in Material Science in 2023 worldwide by Research.com at https://research.com/u/tai-shung-chung</p>	<p>Appendix 3 Prof Chung ranking at NUS in 2022 Stanford report.</p> <p>Appendix 4 Prof Chung ranking in 2023 by Research.com.</p>
<p>3. Support provided by the university and the project's original goals (please specify the type of support or funds provided by the university to assist in research, such as research equipment and funds, research assistant personnel expenses, accommodation, relocation,</p>	<p>Under Profs. Lai, Hu and Hung invitation and Prof. Lai's negotiation with NTUST in 2019/2020, NTUST agreed to provide funding for Prof. Chung with 4 post-doctors and 2 additional professors to strengthen the Yushan program and productivity in addition to the provision of housing and relocation.</p>	<p>So far, none of them (i.e., post-doctors, additional professors) was delivered because the former President had left NTUST in 2020/2021 before Prof. Chung joining. No research assistant was provided either. However, NTUST did provide lab space, good relocation, and housing.</p>	

Main points of assessment	The anticipated goals	Concrete work achievements or results	Supporting documents
children's education assistance, etc.)			
4. Yushan Fellows ' team cooperation (please list team members and cooperation methods) (Yushan Young Fellows don't need to fill in this)	The NTUST membrane center consists of at least 7 members including Profs. Lai, Hu, Hung, Wang, Chung, Tsai and Cheng, we have shared the equipment, conducted weekly seminars to co-train our PG students, exchange our ideas and knowledge, and met industrial partners.	Prof. Chung also obtained additional grant of \$5,405,000 from MOST. We also submitted joint proposals. In addition, Prof. Chung actively participated with Prof. Bing Joe Hwang's Sustainable Energy Development Center to help win large MOE grants.	
5. Yushan (Young) Fellow should aim to cooperate and exchange foreign academic resources, which should be linked to university development. It's suggested to make good use of these global academic network resources to assist the internationalization of the host university and promote international exchanges and cooperation, including teachers and students exchange activity between universities, international research collaborations, dual degree programs and so on.	<p>Since Prof. Chung came from National University of Singapore (NUS), we aim to continue this connect and have technical exchanges in membrane research and development.</p> <p>We also aim to invite a few experienced post-doctors and young professors from oversea to strength our research capability and productivity.</p>	<p>NUS has provided the designs of permeation cells, spinning troughs, membrane distillation, pervaporation, and others for our labs. We have duplicated them. They also gave some valuable materials for our research and measured some important data such as density and glass transition temperature for us.</p> <p>Prof. Chung was invited by NUS on June 15-July 8 in 2022, Jan 2-14 and July 2-14 in 2023 to have technical exchanges on membranes for water recycling and CO₂ capture. Prof. Chung also provided connection between NTUST and NUS for some R&D matters.</p> <p>Prof. Chung has helped the connection between TSMC 台積電 and MTR (Membrane Technology and Research Company, USA) on CO₂ capture. TSMC aims to set up the infrastructure for CO₂ capture, MTR may provide the basic facilities.</p> <p>Due to COVID-19, it was hard to invite foreign scholars to visit Taiwan.</p>	

Quantitative Assessment Form

Item		Results and concrete work performance	Explanation
1. Manpower training		Doctoral courses: _____ Graduate courses: <u>1 in 2021 and 1 in 2023</u> Undergraduate courses: _____ Doctoral students: <u>10</u> persons (in 2023) Master's students: <u>28</u> persons (in 2023) Undergraduate students: <u>4</u> persons (in 2023) Others: <u>1</u> person (in 2023)	Taught "Membrane Science and Technology" in English in Aug-Dec, 2021 and Jan-June 2023.
2. Papers and research works	Domestic	Journal papers: _____ Academic books and papers in books: _____ Conference papers: _____ Technical reports: _____ Others: _____	
	Overseas	Journal papers: <u>17 (in 2023)</u> Academic books and papers in books: _____ Conference papers: <u>9 (in 2023)</u> Technical reports: _____ Others: _____	For conference papers: -3 in AIChE Annual Meeting, USA, 2022; -3 in International Membrane Conference in Taiwan, 2022; -1 in Taiwan Polymer Conference, 2023; -1 in Taiwan Membrane Conference in 2023 and; -1 in International Membrane Conference in Japan, 2023.
3. Keynote speaker		<u>5</u> panels /sessions (in 2023)	-1 for AIChE Annual Meeting (USA) -1 for CYCU (Taiwan); -1 for Taiwan Polymer Conference -1 for a China university online. -1 for EUROMSN2023, France
4. Patents (including patents pending)	Domestic	Quantity: <u>2</u>	1. Nanofiltration membrane and manufacturing method thereof (2022) 2. 一種電漿輔助非溶劑相分離的薄膜製備方式 (2023)

	Overseas	Quantity: _____	
	<input type="checkbox"/> N/A		
5. Industry-Academia Cooperation	Number of partnered enterprises : _____		
	Number of industry-academia research projects: _____		
6. Technology licensing	Technology licensing cases: _____		
	Total technology licensing royalties (amount) NT\$ _____		
	<input type="checkbox"/> N/A		
7. Others			

Appendix 2

List of Journal Publications

(black was the list of papers reported in 2022, blue means new papers)

1. C. Z. Liang, M. Askari, L. T. Choong, T. S. Chung, Ultra-strong polymeric hollow fiber membranes for saline dewatering and desalination, *Nature Communications* 12 (2021) 2338. (Impact Factor = 14.919)
2. B. F. Li, S. Japip, J. Y. Lai, T. S. Chung, Revitalize integrally skinned hollow fiber membranes with spatially impregnated 3D-macrocycles for organic solvent nanofiltration, *Chemical Engineering J.* 422 (2021) 130015. (Impact Factor = 13.273)
3. Y. M. L. Chen, K. J. Lu, W. X. Gai, T. S. Chung, Nanofiltration-inspired Janus membranes with simultaneous wetting and fouling resistance for membrane distillation, *Environmental Science & Technology* 55, 7654-7664 (2021). (Impact Factor = 9.028)
4. D. L. Zhao, Q. P. Zhao, T. S. Chung, Fabrication of defect-free thin-film nanocomposite (TFN) membranes for reverse osmosis desalination, *Desalination* 516, 115230 (2021). (Impact Factor = 9.501)
5. Q. P. Zhao, D. L. Zhao, M. H. Nai, S. B. Chen, T. S. Chung, Nanovoids-enhanced thin-film composite reverse osmosis membranes using ZIF-67 nanoparticles as a sacrificial template, *ACS Applied Materials & Interfaces* 13, 33024–33033 (2021). (Impact Factor = 9.229)
6. K. Y. Wang, B. F. Li, T. S. Chung, 3D-Macrocycles impregnated polybenzimidazole hollow fiber membranes with excellent organic solvent resistance for industrial solvent recovery, *Journal of Membrane Science* 638, 119678 (2021). (Impact Factor = 8.742)
7. F. Feng, C. Z. Liang, J. Wu, M. Weber, C. Maletzko, S. Zhang, T. S. Chung, Polyphenylsulfone (PPSU)-based copolymeric membranes: effects of chemical structure and content on gas permeation and separation, *Polymers* 13, 2745 (2021). (Impact Factor = 4.329)
8. A. Raza, S. Japip, C. Z. Liang, S. Farrukh, A. Hussain, T. S. Chung, Novel cellulose triacetate (CTA)/cellulose diacetate (CDA) blend membranes enhanced by amine functionalized ZIF-8 for CO₂ separation, *Polymers* 13, 2946 (2021). (Impact Factor = 4.329)
9. T. S. Yang, K. Y. Wang, T. S. Chung, Fabrication of thin-film composite hollow fiber membranes in modules for concentrating pharmaceuticals and separating sulphate from high salinity brine in the chlor-alkali process, *Journal of Membrane Science* 640, 119822 (2021). (Impact Factor = 8.742)
10. Y. M. L. Chen, L. Kangjia, C. Z. Liang, T. S. Chung, Mechanically strong Janus tri-bore hollow fiber membranes with asymmetric pores for anti-wetting and anti-fouling membrane distillation, *Chemical Engineering Journal* 429, 132455 (2022). (Impact Factor = 13.273)
11. G. M. Shi, Y. N. Feng, B. F. Li, H. M. Tham, J. Y. Lai, T. S., Recent progress of organic solvent nanofiltration membranes, *Progress in Polymer Science* 123, 101470 (2021). (Impact Factor = 29.1)
12. J. Wu, C. Z. Liang, A. Naderi, T. S. Chung, Tunable supramolecular cavities molecularly homogenized in polymer membranes for ultra-efficient precombustion CO₂ capture, *Advanced Materials* 34, 2105156 (2022). (Impact Factor = 32.09)

13. J. Wu, T. S. Chung, Supramolecular polymer network membranes with molecular-sieving nanocavities for efficient pre-combustion CO₂ capture, *Small Methods* 6, 2101288 (2022). (Impact Factor = 15.367)
14. K. J. Lu, C. Z. Liang, Y. M. L. Chen, T. S. Chung, Unlock the secret of air blowing in developing high strength and superhydrophobic membranes for membrane distillation, *Desalination* 527, 115579 (2022) (Impact Factor = 9.501)
15. Q. P. Zhao, D. L. Zhao, F. Feng, T. S. Chung, S. B. Chen, Thin-film nanocomposite reverse osmosis membranes incorporated with citrate-modified layered double hydroxides (LDHs) for brackish water desalination and boron removal, *Desalination* 527, 115583, (2022) (Impact Factor = 9.501)
16. C. Z. Liang, W. F. Yong, J. Wu, M. Weber, C. Maletzko, J. Y. Lai, T. S. Chung, Plasticization-enhanced trimethylbenzene functionalized polyethersulfone hollow fiber membranes for propylene and propane separation, *Journal of Membrane Science* 647, 120293 (2022). (Impact Factor = 8.742)
17. D. L. Zhao, Q. P. Zhao, H. J. Lin, S. B. Chen, T. S. Chung, Pressure-assisted polydopamine modification of thin-film composite reverse osmosis membranes for enhanced desalination and antifouling performance, *Desalination* 530, 115671 (2022) (Impact Factor = 9.501)
18. B. W. Zhao, G. M. Shi, J. Y. Lai, T. S. Chung, Braid-reinforced polybenzimidazole (PBI) hollow fiber membranes for organic solvent nanofiltration (OSN), *Separation and Purification Technology* 290, 120811 (2022). (Impact Factor = 7.312)
19. K. Y. Wang, M. Weber, T.S. Chung, Polybenzimidazoles (PBIs) and state-of-the-art PBI hollow fiber membranes for water, organic solvent and gas separations: a Review, *Journal of Materials Chemistry A*, 10, 8687 - 8718 (2022). (Impact Factor = 12.73)
20. M. S. Qua, Y. Zhao, J. Zhang, S. Hernandez, A. T. Paing, K. Mottaiyan, J. Zuo, A. Dhalla, T.S. Chung, C. Gudipati, Novel Sandwich-Structured Hollow Fiber Membrane for High-Efficiency Membrane Distillation and Scale-Up for Pilot Validation, *Membranes* 12, 423 (2022). (Impact Factor = 4.562)
21. Z. F. Gao, J. T. Liu, T. S. Chung, Rapid in-situ growth of covalent organic frameworks on hollow fiber substrates with Janus-like characteristics for efficient organic solvent nanofiltration, *Separation and Purification Technology* 294, 121166 (2022). (Impact Factor = 7.312)
22. T. S. Chung, J. Y. Lai, The potential of calixarenes for membrane separation, *Chemical Engineering Research and Design (CHERD)* 183, 538–545 (2022). (Impact Factor = 4.562)
23. W. P. Li, A. T. Paing, C. A. Chow, M. S. Qua, K. Mottaiyan, K. J. Lu, A. Dhalla, T. S. Chung, C. Gudipati, Scale-up and validation of novel tri-bore PVDF hollow fiber membranes for membrane distillation application for desalination and industrial wastewater recycling, *Membranes* 12, 573 (2022). (Impact Factor = 4.562)
24. F. Qiu, R. Chen, T. S. Chung, Q. C. Ge, Forward osmosis for heavy metal removal: Multi-charged metallic complexes as draw solutes, *Desalination* 539, 115924 (2022). (Impact Factor = 9.501)
25. Z. G. Abdi, J.-C. Chen, T.S. Chung, Infiltration of 3D-macrocycles to integrally skinned asymmetric P84 co-polyimide membranes for boron removal, *Desalination* 540, 115988 (2022). (Impact Factor = 9.9)

26. T. S. Yang, T. S. Chung, Novel thin-film nanocomposite hollow fiber membranes in modules with reduced reverse solute flux for pressure retarded osmosis, *Chemical Engineering Journal* 450, 138338 (2022). (Impact Factor = 15.1)
27. S. S. Beshahwored, Y.-H. Huang, Z. G. Abdi, C.-C. Hu, T.-S. Chung, Polybenzimidazole (PBI) membranes cross-linked with various cross-linkers and impregnated with 4-sulfocalix[4]arene (SCA4) for organic solvent nanofiltration (OSN), *Journal of Membrane Science* 663, 121039 (2022). (Impact Factor = 9.5)
28. Q. P. Zhao, D. L. Zhao, T. S. Chung, S. B. Chen, In-situ growth of layered double hydroxides (LDHs) onto thin-film composite membranes for enhanced reverse osmosis performance, *Desalination* 547, 116235 (2023). (Impact Factor = 9.9)
29. D. L. Zhao, F. Feng, L. Shen, Z. Huang, Q. Zhao, H. Lin, T. S. Chung, Engineering metal–organic frameworks (MOFs) based thin-film nanocomposite (TFN) membranes for molecular separation, *Chemical Engineering Journal* 454, 140447 (2023). (Impact Factor = 15.1)
30. J. H. Low, J. Zhang, W. P. Li, T. S. Yang, C. F. Wan, F. Esa, M. S. Qua, K. Mottaiyan, S. Murugan, M. Aiman, A. Dhalla, T. S. Chung, C. Gudipati, Industrial scale thin-film composite membrane modules for salinity-gradient energy harvesting through pressure retarded osmosis, *Desalination* 548, 116217 (2023). (Impact Factor = 9.9)
31. R. Chen, F. Qiu, Q-W Meng¹, T. S. Chung, Q. C. Ge, A cobalt-based forward osmosis draw solute synthesized from lithium-ion battery wastes for cobalt-containing wastewater purification, *Desalination* 548, 116279 (2023). (Impact Factor = 9.9)
32. O. Setiawan, Y-H. Huang, Z. G. Abdi, W.-S. Hung, T.S. Chung, pH-tunable and pH-responsive Polybenzimidazole (PBI) Nanofiltration Membranes for Li⁺/Mg²⁺ Separation, *Journal of Membrane Science* 668, 121269 (2023). (Impact Factor = 9.5)
33. Z. G. Abdi, J.Y. Lai, T.S. Chung, Green modification of P84 co-polyimide with β -cyclodextrin for separation of dye/salt mixtures. *Desalination* 549, 116365 (2023). (Impact Factor = 9.9)
34. Q. P. Zhao, D. L. Zhao, L. Y. Ee, T. S. Chung, S. B. Chen, In-situ coating of Fe-TA complex on thin-film composite membranes for improved water permeance in reverse osmosis desalination, *Desalination* 554, 116515 (2023). (Impact Factor = 9.9)
35. B. F. Li, S. Wang, X. J. Loh, Z. Li, T. S. Chung, Closed-loop recyclable membranes enabled by covalent adaptable networks for water purification, *The Proceedings of the National Academy of Sciences (PNAS)* 120 (15) e2301009120 (2023). (Impact Factor = 11.1)
36. Y. H. Huang, M. J. Wang, T. S. Chung, Zwitterionic poly(sulfobetaine methacrylate-co-acrylic acid) assisted simultaneous anti-wetting and anti-fouling membranes for membrane distillation, 555, 116527, *Desalination* (2023). (Impact Factor = 9.9)
37. Q. Xu, J. Gao, F. Feng, T. S. Chung, J.W. Jiang, Synergizing machine learning, molecular simulation and experiment to develop polymer membranes for solvent recovery, *Journal of Membrane Science* 678, 121678 (2023). (Impact Factor = 9.5)
38. D. L. Zhao, H. Jin, Q. Zhao, Y. Xu, L. Shen, H. Lin, T. S. Chung, Smart integration of MOFs and CQDs to fabricate defect-free and self-cleaning TFN membranes for dye removal, *Journal of Membrane Science* 679, 121706 (2023). (Impact Factor = 9.5)

39. J. Wu, J. Gao, S. B. Chen, T. S. Chung, Solvent-activated thin-film nanocomposite membranes molecularly tuned with macrocyclic cavities for efficient water desalination and boron removal, *Chemical Engineering Journal* 469, 143982 (2023). (Impact Factor = 15.1)
40. F. Feng, J. Wu, C. Z. Liang, M. Weber, S. Zhang, T. S. Chung, Synergistic dual-polymer blend membranes with molecularly mixed macrocyclic cavitands for efficient pre-combustion CO₂ capture, *Chemical Engineering Journal* 470, 144073 (2023). (Impact Factor = 15.1)
41. S. S. Beshahwored, M. Weber, C.-C. Hu, J. Y. Lai, T.S. Chung, Effects of sulfonation degree on compatibility and separation performance of polybenzimidazole (PBI)-sulfonated polyphenylenesulfone (sPPSU) blend membranes, *Journal of Membrane Science* 683, 121849 (2023). (Impact Factor = 9.5)
42. B. W. Zhao, J. W. Wong, C. Z. Liang, J. Wu, T. S. Chung, S. Zhang, Inner-selective polyethersulfone-polydimethylsiloxane (PES-PDMS) thin film composite hollow fiber membrane for CO₂/N₂ separation at high pressures, *Separation and Purification Technology*, 323, 124439 (2023). (Impact Factor = 8.6)
43. O. Setiawan, Z. G. Abdi, M. Weber, W. S. Hung, T, S, Chung, Employing sulfolane as a green solvent in the fabrication of nanofiltration membranes with excellent dye/salt separation performances for textile wastewater treatment, *Journal of Membrane Science in press*, (2023). (Impact Factor = 9.5)

Recent Invited Keynotes and Plenary Lectures

1. T. S. Chung, *Membrane applications in the modern water resource management*, (a plenary talk), International Membrane Conference in Taiwan, Chung Yuan Christian University, Taiwan, Oct 30, 2021.
2. T. S. Chung, *Advanced polymer membranes for clean & renewable energy*, Huazhong University of Science and Technology, Wuhan, China Oct 13, 2021.
3. T. S. Chung, *Molecular design of polymer membranes for clean & renewable energy ((1) H₂, CH₄, (2) biofuel, (3) osmotic energy generation* (online seminar), Central South University, Hunan, China, September 16, 2021.
4. T. S. Chung, *My Membrane Research at National University of Singapore (NUS)* (online seminar), Chung Yuan Christian University, Taiwan, August 6, 2021.
5. T. S. Chung, *Polymeric membranes for clean & renewable energy*, 陳芳燦講座邀請演, National Taiwan University, Taiwan, May 6, 2022.
6. T. S. Chung, *Advanced polymer membranes for H₂ purification and separation*, AIChE Annual Meeting, Suzana Nunes Honoring sessions, Phoenix, Arizona, USA, 13th - 18th November 2022.
7. T. S. Chung, *Polymeric nanocomposite membranes for clean energy applications (CH₄ and H₂)*, Taiwan Polymer Society, Taiwan, Jan 17-18, 2023.
8. T. S. Chung, *My Membrane Research at National University of Singapore (NUS)* (1995-2022), for 提升研發創新能量講座 invited by Chung Yuan Christian University, Taiwan, May 11, 2023.

9. T. S. Chung, *Molecular engineering of nanocomposite membranes for H₂ purification and separation*, New Energy Chemistry and Device Conference, Huazhong University of Science and Technology (HUST), Wuhan, China, May 12-14, 2023.2023 (online).
10. T. S. Chung, *Polymer Membranes for Water Reuse, Seawater Desalination, and Clean Energy, Plenary talk*, International Congress and Expo on Materials Science and Nanoscience (EUROMSN2023), Paris, France, June 28-30, 2023 at Paris, France.

List of Conference Presentations

1. C. Z. Liang, W. F. Yong, J. Wu, M. Weber, C. Maletzko, J.Y. Lai, T.S. Chung, Plasticization-enhanced trimethylbenzene functionalized polyethersulfone hollow fiber membranes for propylene and propane separation, 13th Conference of the Aseanian Membrane Society (AMS13), Singapore, 4th - 6th July 2022. (Oral presentation).
2. Z. F. Gao, J. Liu, T.S. Chung, Rapid in-situ growth of covalent organic frameworks on hollow fiber substrates with Janus-like characteristics for efficient organic solvent nanofiltration under $\Delta P = 1$ bar, 13th Conference of the Aseanian Membrane Society (AMS13), Singapore, 4th - 6th July 2022. (Oral presentation-China Session).
3. Feng, C. Z. Liang, J. Wu, M. Weber, C. Maletzko, S. Zhang, T.S. Chung, Polyphenylsulfone (PPSU)-Copolymer Based Membranes: Effects of Chemical Structure and Comonomer Content on Gas Permeation and Separation, 13th Conference of the Aseanian Membrane Society (AMS13), Singapore, 4th - 6th July 2022. (Oral presentation).
4. J. Wu, T. S. Chung, Supramolecular polymer network membranes with molecular-sieving nanocavities for efficient pre-combustion CO₂ capture, 13th Conference of the Aseanian Membrane Society (AMS13), Singapore, 4th - 6th July 2022 (Oral presentation).
5. D. L. Zhao, Q. Zhao, S. B. Chen, T. S. Chung, Molecular design of thin film nanocomposite membranes for desalination, 13th Conference of the Aseanian Membrane Society (AMS13), Singapore, 4th - 6th July 2022. (Oral presentation).
6. C.Z. Liang, M. Askari, L.T. Choong, T.S. Chung, Ultra-strong polymeric hollow fiber membranes for saline dewatering and desalination, AIChE Annual Meeting, Session: Water Treatment, Desalination, and Reuse II, Phoenix, Arizona, USA, 13th - 18th November 2022. (oral presentation).
7. J. Wu, C.Z. Liang, A. Naderi, T.S. Chung, Tunable supramolecular cavities molecularly homogenized in polymer membranes for ultra-efficient precombustion CO₂ capture, AIChE Annual Meeting, Session: Mixed-Matrix Materials for Gas Separation, Phoenix, Arizona, USA, 13th -18th November 2022. (oral presentation).
8. F. Feng, J. Wu, C.Z. Liang, M. Weber, S. Zhang, T. S. Chung, Molecularly mixed nanocomposite membranes based on high-performance commercial polymer blend for efficient pre-combustion CO₂ Capture, Session: Mixed-Matrix Materials for Gas Separation, AIChE Annual Meeting, Phoenix, AZ, USA, November 13 – November 18, 2022.
9. S. S. Beshahwored, Y. H. Huang, Z. G. Abdi, C. C. Hu, T. S. Chung, Polybenzimidazole (PBI) membranes cross-linked with various cross-linkers and impregnated with 4-sulfocalix [4] arene (SCA4) for organic solvent nanofiltration (OSN), 2022 International Membrane Conference in Taiwan (2022IMCT), Taiwan, December 23, 2022. (Oral presentation).

10. Z. G. Abdi, J. -C. Chen, T. S. Chung, Infiltration of 3D-macrocycles to integrally skinned asymmetric P84 co-polyimide membranes for boron removal. International Membrane Conference in Taiwan (2022IMCT), December 23, 2022 (Invited speaker).
11. O. Setiawan, Y.H. Huang, Z.G. Abdi, W.S. Hung, T.S. Chung, pH-tunable and pH-responsive polybenzimidazole (PBI) nanofiltration membranes for $\text{Li}^+/\text{Mg}^{2+}$ separation, International Membrane Conference in Taiwan (IMCT) 2022, National Taiwan University, Taipei, Taiwan, December 23, 2022. (received the Bronze medal award from the student oral contest).
12. Z. G. Abdi, J. -C. Chen, T. S. Chung, Infiltration of 3D-macrocycles to integrally skinned asymmetric P84 co-polyimide membranes for boron removal. Polymer Society Annual Meeting, Taoyuan City, Taiwan, January 17-18, 2023 (oral presentation).
13. Y.-H. Huang, M.-J. Wang, T.S. Chung, Zwitterionic poly(sulfobetaine methacrylate-co-acrylic acid) assisted simultaneous anti-wetting and anti-fouling membranes for membrane distillation, 2023 International Membrane Conference in Taiwan (2023IMCT), Taiwan, June 29-30, 2023. (Poster presentation).
14. O. Setiawan, Y.H. Huang, Z.G. Abdi, W.S. Hung, T.S. Chung, pH-tunable and pH-responsive polybenzimidazole (PBI) nanofiltration membranes for $\text{Li}^+/\text{Mg}^{2+}$ separation, 13th International Congress on Membranes and Membrane Processes (ICOM 2023), Chiba, Japan, July 9-14, 2023 (Oral presentation).

AMS 13 conference had a special session for Prof. Chung as follows:



13th Conference of Aseanian Membrane Society (AMS 13)
 4-6 July 2022, Singapore
<https://www.ams13.org>

Physical + Online Sessions
Special Session in honour of Prof. Neal Chung

Important Dates
 Abstract Submission Deadline: 15 March 2022
 Acceptance Notification: 1 April 2022
 Early Bird Registration Deadline: 15 May 2022

Organized by: The Aseanian Membrane Society (AMS)
Hosted by: Membrane Society in Singapore (MEMSIS)

Co-Chairs
 Rong Wang TH Chong
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Welcome to Singapore!
 for fully vaccinated attendees

Supported by: NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE, Singapore Membrane Technology Centre, NUS National University of Singapore, Membrane Science and Technology Consortium (MSTC), Stat, SGMEM

学者名 国家名 National University of Singapore 学科名 🔍

排名方法与规则 (<http://www.globalauthorid.com/WebPortal/NewsView?InfoID=7a0917d7-e6e2-4329-9cd5-b9f66cbf7f72>) 分析报告
(<http://www.globalauthorid.com/WebPortal/NewsView?InfoID=dcc129f2-4a50-4ac3-8f3c-c7c874d0f34e>) 完整数据下载
(<http://img.globalauthorid.com/UploadFiles/upload/file/20221101638029233121518549/2022全球学者学术影响力排行榜.xlsx>)
↓ 学者总数: 89 ↓ 排序选择 ↓ 更新日期: 2022年08月31日

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序号	学者	国家	机构信息	学科	论文总评分	论文篇均评分	H指数	论文数	全球总排名
37	Barry,Halliwell	新加坡	National University of Singapore	生物学	8675470.803723	11949.684000	164	726	37
356	Tai-Shung,Chung	新加坡	National University of Singapore	化学,化学工程与技术	3788913.661725	4946.362000	115	766	356
373	陈小元	新加坡	National University of Singapore	生物学,特种医学	3692762.671649	3347.926000	151	1103	373
871	Kian Ping,Loh	新加坡	National University of Singapore	材料科学与工程,化学	2694206.808715	4490.344000	100	600	871
888	Seeram,Ramakrishna	新加坡	National University of Singapore	材料科学与工程	2662184.155527	1687.062000	144	1578	888
1150	Sydney,Brenner	新加坡	National University of Singapore	生物学	2372739.722840	7484.983000	83	317	1150
1364	刘斌	新加坡	National University of Singapore	化学	2253942.310584	4553.418000	98	495	1364
1443	A. H. Castro,Neto	新加坡	National University of Singapore	物理学	2205583.099267	11487.411000	81	192	1443
1838	Hua Chun,Zeng	新加坡	National University of Singapore	材料科学与工程,化学	2019689.299590	8210.119000	76	246	1838
1990	Xiaogang,Liu	新加坡	National University of Singapore	材料科学与工程,化学	1959806.390348	5764.136000	89	340	1990
3083	葛树志	新加坡	National University of Singapore	控制科学与工程	1632891.560991	2309.606000	87	707	3083
3164	Jim Yang, Lee	新加坡	National University of Singapore	材料科学与工程,化学	1613912.135459	4159.567000	96	388	3164
3671	Jean Paul,Thiery	新加坡	National University of Singapore	生物学,临床医学	1509632.566404	3099.861000	94	487	3671
4591	Yong,Zhang	新加坡	National University of Singapore	材料科学与工程,化学	1369728.155875	6283.156000	69	218	4591
5102	张瑞	新加坡	National University of Singapore	计算机科学与技术,信息与通信工程	1304073.059511	2751.208000	100	474	5102
5989	Hian Kee, Lee	新加坡	National University of Singapore	化学	1203476.552066	2906.948000	75	414	5989
6048	John,Wang	新加坡	National University of Singapore	材料科学与工程	1197205.274817	2196.706000	82	545	6048
6440	Kawi, Sibudjing	新加坡	National University of Singapore	化学	1164585.870665	3225.999000	67	361	6440
6480	Dario,Campana	新加坡	National University of Singapore	临床医学	1160953.735280	3261.105000	85	356	6480
6718	Goki,Eda	新加坡	National University of Singapore	材料科学与工程,化学	1141889.843820	7562.184000	60	151	6718
6856	Stephen J,Pennycook	新加坡	National University of Singapore	材料科学与工程,物理学	1131738.601362	1527.312000	107	741	6856
7131	Chwee Teck,Lim	新加坡	National University of Singapore	生物学,临床医学	1110600.305763	1972.647000	92	563	7131
7367	Ang, Beng Wah	新加坡	National University of Singapore	管理科学与工程,临床医学	1094972.299210	7348.807000	60	149	7367
7656	Si-Shen,Feng	新加坡	National University of Singapore	化学,药学	1073879.604145	6392.140000	66	168	7656
8789	Jagadese J,Vittal	新加坡	National University of Singapore	化学	1003407.594392	2081.758000	71	482	8789
8968	Cheng-Wei,Qiu	新加坡	National University of Singapore	物理学	993233.440358	2082.250000	81	477	8968
9217	Paul,Matsudaira	新加坡	National University of Singapore	生物学	979753.052637	4802.711000	54	204	9217
9982	B.V.R,Chowdari	新加坡	National University of Singapore	材料科学与工程,化学	942864.750685	3801.873000	72	248	9982
10526	Nobuhiro,Yuki	新加坡	National University of Singapore	临床医学	916125.364508	1862.043000	67	492	10526
11446	吕力	新加坡	National University of Singapore	材料科学与工程	877616.120596	1875.248000	70	468	11446
11468	Jianping,Xie	新加坡	National University of Singapore	材料科学与工程,化学	876548.711689	3878.534000	77	226	11468
11559	陈伟	新加坡	National University of Singapore	材料科学与工程,化学	873803.840304	2201.017000	79	397	11559

11749	Shu, Chang	新加坡	National University of Singapore	物理学	866465.178347	2177.048000	59	398	11749
11781	Seang-Mei,Saw	新加坡	National University of Singapore	临床医学	865461.407541	1309.321000	88	661	11781
12362	Gautam,Sethi	新加坡	National University of Singapore	生物学,临床医学	845926.731746	1926.940000	103	439	12362
12949	吴继善	新加坡	National University of Singapore	化学	826095.739805	2503.320000	69	330	12949
14004	J. Paul,Chen	新加坡	National University of Singapore	化学	793443.413428	2906.386000	66	273	14004
14259	Jianyong,Ouyang	新加坡	National University of Singapore	材料科学与工程,化学	785547.859562	4316.197000	58	182	14259
15057	Rob M,Van Dam	新加坡	National University of Singapore	临床医学	762647.270004	2236.502000	80	341	15057
16330	Philip K,Moore	新加坡	National University of Singapore	生物学,药学	729731.040343	2930.646000	69	249	16330
16388	Han-Ming,Shen	新加坡	National University of Singapore	生物学	728489.093643	2812.699000	76	259	16388
18104	Dan,Zhao	新加坡	National University of Singapore	化学	689613.494735	3397.110000	63	203	18104
19681	Navjot S,Sodhi	新加坡	National University of Singapore	农业工程,生物学	658016.572400	4538.045000	54	145	19681
20230	Nicholas I,Paton	新加坡	National University of Singapore	临床医学,公共卫生与预防医学	647543.122063	4905.629000	36	132	20230
20837	Choon Nam,Ong	新加坡	National University of Singapore	生物学,临床医学	636372.920840	1679.084000	76	379	20837
21995	颜宁	新加坡	National University of Singapore	化学	617909.577417	3058.958000	61	202	21995
24981	许建新	新加坡	National University of Singapore	控制科学与工程	573906.146864	1325.418000	57	433	24981
25317	R. Manjunatha,Kini	新加坡	National University of Singapore	生物学	569038.128342	2267.084000	55	251	25317
27932	M.V.Reddy	新加坡	National University of Singapore	材料科学与工程,化学	534808.876429	2954.745000	62	181	27932
29088	Tze Pin,Ng	新加坡	National University of Singapore	临床医学	521037.696739	1834.639000	51	284	29088
31963	Bor Luen,Tang	新加坡	National University of Singapore	生物学	491667.928159	2165.938000	47	227	31963
32509	Walter,Hunziker	新加坡	National University of Singapore	生物学	486620.478673	2547.751000	56	191	32509
34362	Thompson S.H,Teo	新加坡	National University of Singapore	工商管理,图书情报与档案管理	469789.146997	4349.899000	39	108	34362
35291	Tong Heng,Lee	新加坡	National University of Singapore	控制科学与工程	462094.094292	633.005000	74	730	35291
36072	Markus R,Wenk	新加坡	National University of Singapore	生物学	455585.714244	1668.812000	66	273	36072
37614	Rudolf,Meier	新加坡	National University of Singapore	生物学	443415.726682	2737.134000	48	162	37614
37742	Yuan Kun,Lee	新加坡	National University of Singapore	生物学	442504.680094	1676.154000	46	264	37742
42654	Ho, Roger C.	新加坡	National University of Singapore	临床医学	409003.718213	2086.753000	40	196	42654
44949	Bin,Su	新加坡	National University of Singapore	环境科学与工程	395271.082359	4705.608000	43	84	44949
46552	Kok-Kwang,Phoon	新加坡	National University of Singapore	土木工程,地质资源与地质工程	385901.732209	1484.237000	50	260	46552
47322	B. T. Thomas,Yeo	新加坡	National University of Singapore	临床医学,基础医学	381485.213268	3436.803000	43	111	47322
50930	Wei-Yi,Ong	新加坡	National University of Singapore	临床医学,基础医学	361968.921360	1566.965000	45	231	50930
52054	J.Y. Richard,Liew	新加坡	National University of Singapore	土木工程	356653.832997	1636.026000	45	218	52054
53926	Artur,Ekert	新加坡	National University of Singapore	物理学	347813.842837	5269.906000	28	66	53926
56422	Eugene,Khor	新加坡	National University of Singapore	化学	336197.810329	5093.906000	29	66	56422
61264	Dipti,Srinivasan	新加坡	National University of Singapore	计算机科学与技术	316307.500376	1090.715000	50	290	61264
61330	Valerio,Scarani	新加坡	National University of Singapore	物理学	316056.181882	2394.365000	41	132	61330
67966	Ji, Wei	新加坡	National University of Singapore	材料科学与工程,物理学	291640.872387	1045.307000	63	279	67966
69598	Mike W.-L,Cheung	新加坡	National University of Singapore	心理学	286092.294172	4334.731000	31	66	69598
70864	Stefan,Adams	新加坡	National University of Singapore	材料科学与工程,化学	281944.512212	1708.754000	43	165	70864
71791	Yee-Chia,Yeo	新加坡	National University of Singapore	物理学	279131.182358	641.680000	43	435	71791
73529	Palani,Balaya	新加坡	National University of Singapore	材料科学与工程,化学	273680.448935	3649.072000	35	75	73529
74731	Faidon,Magkos	新加坡	National University of Singapore	临床医学	270189.052997	1657.601000	41	163	74731
75185	刘绍全	新加坡	National University of Singapore	食品科学与工程	268848.794083	1238.934000	33	217	75185
75535	Wu, Yihong H.	新加坡	National University of Singapore	材料科学与工程,物理学	267898.337608	1120.913000	39	239	75535
75542	Khek Yu,Ho	新加坡	National University of Singapore	临床医学	267884.368575	769.782000	50	348	75542
76173	C.K.Ong	新加坡	National University of Singapore	物理学	266018.691686	527.814000	48	504	76173
76458	Kevin S. W,Tan	新加坡	National University of Singapore	临床医学	265215.889418	1123.796000	35	236	76458
78763	Xudong,Chen	新加坡	National University of Singapore	物理学	258632.335225	1068.728000	46	242	78763

80442	Bee Wah, Lee	新加坡	National University of Singapore	临床医学	254182.235953	767.922000	48	331	80442
81006	Kim-Chuan, Toh	新加坡	National University of Singapore	数学	252726.966521	2021.815000	34	125	81006
81211	Paul A, Tambyah	新加坡	National University of Singapore	临床医学	252229.872924	1091.904000	38	231	81211
81965	Weizhu, Bao	新加坡	National University of Singapore	物理学, 数学	250424.475177	1897.155000	38	132	81965
83623	Chun Wei, Yap	新加坡	National University of Singapore	临床医学	246293.128899	2018.796000	37	122	83623
84973	E. Shyong, Tai	新加坡	National University of Singapore	临床医学	242942.192776	424.724000	86	572	84973
86153	Gaik-Khuan, Chuah	新加坡	National University of Singapore	化学	240058.256729	2124.409000	39	113	86153
86306	Stuart W.G, Derbyshire	新加坡	National University of Singapore	临床医学	239705.235948	2888.014000	30	83	86306
90287	Zhi Ning, Chen	新加坡	National University of Singapore	物理学	230427.814912	662.148000	49	348	90287
90373	Vincent T.K, Chow	新加坡	National University of Singapore	生物学	230215.511931	1134.066000	44	203	90373

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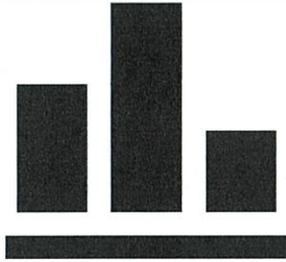
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D-Index & Metrics



Best Publications

Home / Best Scientists - Chemistry / Tai-Shung Chung



Chemistry

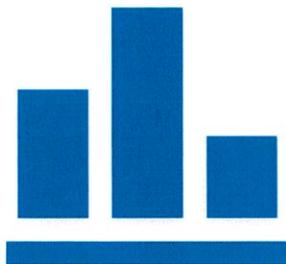
Singapore
2023

**Materials
Science**

Singapore
2023

Tai-Shung Chung

 National University of Singapore
Singapore



D-Index & Metrics

Discipline name	D-index	Citations	Publications	World Ranking	National Ranking
Materials Science	D-index 141	Citations 66,705	846	World Ranking 110	National Ranking 5

Chemistry D-index 145 Citations 850 World Ranking 79 National Ranking 1

Research.com Recognitions

Awards & Achievements

2023 - Research.com Materials Science in Singapore Leader Award

2023 - Research.com Chemistry in Singapore Leader Award

2022 - Research.com Materials Science in Singapore Leader Award

2022 - Research.com Chemistry in Singapore Leader Award

Overview

What is he best known for?

The fields of study he is best known for:

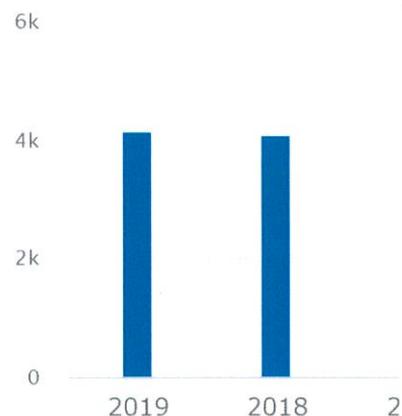
- Organic chemistry
- Polymer
- Chemical engineering

His main research concerns Chemical engineering, Polymer chemistry, Forward osmosis, Polymer and Chromatography. His Chemical engineering research is multidisciplinary, relying on both Nanofiltration, Fiber, Thin-film composite membrane, Gas separation and Permeation. His research integrates issues of Layer, Membrane technology and Membrane distillation in his study of Fiber.

The concepts of his Polymer chemistry study are interwoven with issues in Selectivity, Polyimide, Pervaporation and Thermal stability. His Forward osmosis study incorporates themes from Concentration polarization, Environmental engineering, Fouling, Desalination and Osmosis. His research on Chromatography also deals with topics like

- Composite material, which have a strong connection to Volumetric flow rate,
- Porosity which is related to area like Composite number and Solvent.

Citations by year



Frequent Co-Authors



Rong Wang

Nanyang Technological University



Donald R Paul

The University of Texas at Austin



Suat Hong Goh

National University of Singapore

His most cited work include:

- MIXED MATRIX MEMBRANES (MMMS) COMPRISING ORGANIC POLYMERS WITH DISPERSED INORGANIC FILLERS FOR GAS SEPARATION (1240 citations)
- MORPHOLOGY, DRUG DISTRIBUTION, AND IN VITRO RELEASE PROFILES OF BIODEGRADABLE POLYMERIC MICROSPHERES CONTAINING PROTEIN FABRICATED BY DOUBLE-EMULSION SOLVENT EXTRACTION/EVAPORATION METHOD (563 citations)
- Recent advances in membrane distillation processes: Membrane development, configuration design and application exploring (473 citations)

What are the main themes of his work throughout his whole career to date?

His primary areas of investigation include Chemical engineering, Polymer chemistry, Polymer, Fiber and Composite material. The Chemical engineering study combines topics in areas such as Forward osmosis, Nanofiltration, Pervaporation, Chromatography and Gas separation. Tai-Shung Chung combines subjects such as Desalination, Concentration polarization, Thin-film composite membrane and Osmosis with his study of Forward osmosis.

His Polymer chemistry research incorporates themes from Semipermeable membrane, Polymerization, Polyimide, Selectivity and Permeation. His Polymer study combines topics in areas such as Thermal stability and Solvent. Tai-Shung Chung interconnects Layer, Phase inversion, Membrane technology and Permeance in the investigation of issues within Fiber.

He most often published in these fields:

- Chemical engineering (57.39%)
- Polymer chemistry (38.19%)
- Polymer (23.95%)



Chaobin He

National University of Singapore



Lu Shao

Harbin Institute of Technology



Si-Xue Cheng

Wuhan University



T. Alan Hatton

MIT



Yi Yan Yang

Agency for Science, Technology and Research



Juin-Yih Lai

National Taiwan University of Science and Technology

What were the highlights of his more recent work (between 2016-2021)?

- Chemical engineering (57.39%)
- Nanofiltration (11.97%)
- Fiber (22.01%)

In recent papers he was focusing on the following fields of study:

Tai-Shung Chung mostly deals with Chemical engineering, Nanofiltration, Fiber, Permeance and Pressure-retarded osmosis. He has researched Chemical engineering in several fields, including Solvent, Hollow fiber membrane, Polymer, Membrane distillation and Interfacial polymerization. His studies in Polymer integrate themes in fields like Gas separation, Pervaporation and Polymer chemistry.

He has included themes like Phase inversion and Surface charge in his Polymer chemistry study. His work in Fiber tackles topics such as Membrane technology which are related to areas like Nanotechnology. His Pressure-retarded osmosis research is multidisciplinary, incorporating perspectives in Wastewater, Chromatography, Osmotic power and Fouling.

Between 2016 and 2021, his most popular works were:

- Advanced Porous Materials in Mixed Matrix Membranes (92 citations)
- Precise Molecular Sieving Architectures with Janus Pathways for Both Polar and Nonpolar Molecules (84 citations)
- UiO-66 incorporated thin-film nanocomposite membranes for efficient selenium and arsenic removal (76 citations)

In his most recent research, the most cited papers focused on:



Gary L. Amy

Clemson University

External Links

- [Personal Website for Tai-Shung Chung](#)

- Organic chemistry
- Polymer
- Oxygen

Tai-Shung Chung mainly focuses on Chemical engineering, Nanofiltration, Permeance, Fiber and Polymer chemistry. His Chemical engineering study integrates concerns from other disciplines, such as Solvent, Polyimide, Pervaporation, Thin-film composite membrane and Membrane distillation. His studies deal with areas such as Hexane and Aqueous solution as well as Nanofiltration.

The various areas that Tai-Shung Chung examines in his Permeance study include Gas separation, Dip-coating and Polyacrylonitrile. His Fiber research is multidisciplinary, incorporating elements of Composite number and Polyvinylidene fluoride. His work carried out in the field of Polymer chemistry brings together such families of science as Graphene, Phase inversion, Polyethylene glycol and Polymer.

This overview was generated by a machine learning system which analysed the scientist's body of work. If you have any feedback, you can [contact us](#) here.



Best

Publications

MIXED MATRIX MEMBRANES (MMMS) COMPRISING ORGANIC POLYMERS WITH DISPERSED INORGANIC FILLERS FOR GAS SEPARATION

Tai-Shung Chung;Lan Ying Jiang;Yi Li;Santi Kulprathipanja.
Progress in Polymer Science **(2007)**

2209
Citations

**MORPHOLOGY, DRUG DISTRIBUTION, AND IN VITRO
RELEASE PROFILES OF BIODEGRADABLE POLYMERIC
MICROSPHERES CONTAINING PROTEIN FABRICATED BY
DOUBLE-EMULSION SOLVENT EXTRACTION/EVAPORATION
METHOD**

Yi-Yan Yang;Tai-Shung Chung;Ngee Ping Ng.
Biomaterials **(2001)**

944 Citations

**Recent advances in membrane distillation processes:
Membrane development, configuration design and
application exploring**

Peng Wang;Peng Wang;Tai-Shung Chung.
Journal of Membrane Science **(2015)**

770 Citations

**Forward osmosis processes: Yesterday, today and
tomorrow**

Tai-Shung Chung;Sui Zhang;Kai Yu Wang;Jincai Su.
Desalination **(2012)**

667 Citations

**The strategies of molecular architecture and modification
of polyimide-based membranes for CO₂ removal from
natural gas—A review**

Youchang Xiao;Bee Ting Low;Seyed Saeid Hosseini;Tai Shung
Chung.
Progress in Polymer Science **(2009)**

539 Citations

**Draw solutions for forward osmosis processes:
Developments, challenges, and prospects for the future**

Qingchun Ge;Mingming Ling;Tai-Shung Chung.
Journal of Membrane Science **(2013)**

539 Citations

Polyimides membranes for pervaporation and biofuels separation

Lan Ying Jiang;Lan Ying Jiang;Yan Wang;Tai-Shung Chung;Xiang Yi Qiao.
Progress in Polymer Science **(2009)**

468 Citations

Molecular elucidation of morphology and mechanical properties of PVDF hollow fiber membranes from aspects of phase inversion, crystallization and rheology

Panu Sukitpaneenit;Tai-Shung Chung.
Journal of Membrane Science **(2009)**

466 Citations

Polyethylenimine-grafted multiwalled carbon nanotubes for secure noncovalent immobilization and efficient delivery of DNA.

Ye Liu;De-Cheng Wu;Wei-De Zhang;Xuan Jiang.
Angewandte Chemie **(2005)**

453 Citations

The effects of polymer chain rigidification, zeolite pore size and pore blockage on polyethersulfone (PES)-zeolite A mixed matrix membranes

Yi Li;Tai-Shung Chung;Chun Cao;Santi Kulprathipanja.
Journal of Membrane Science **(2005)**

450 Citations

If you think any of the details on this page are incorrect, let us know.

Contact us



Best Scientists Citing Tai-Shung Chung



Ahmad Fauzi Ismail

University of Technology
Malaysia
Publications: 265



Takeshi Matsuura

University of Ottawa
Publications: 167



Rong Wang

Nanyang Technological
University
Publications: 147



Trending Scientists



Shabbir Ahmed

Georgia Institute of
Technology



Hyung Hee Cho

Yonsei University



Dallas L. Rabenstein

University of California,
Riverside

Research.com



