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EDUCATION

2000 - 2004	Ph.D.	Civil and Environmental Engineering	KAIST, South Korea
1998 - 2000	M.S.	Civil and Environmental Engineering	KAIST, South Korea
1994 - 1998	B.S.	Environmental Engineering	INHA University, South Korea

PROFESSIONAL & RESEARCH EXPERIENCE

2021 - current	Associate Professor with tenure, University of Cincinnati, U.S.A
2022 - 2024	Adjunct Professor, Gwangju Institute of Science and Technology, South Korea
2022 - 2022	Visiting Scholar, Gwangju Institute of Science and Technology, South Korea
2015 - 2020	Assistant Professor, University of Cincinnati, U.S.A
2011 - 2014	Lecturer/Senior Lecturer, University of Sydney, Australia
2007 - 2010	Research Associate, Duke University, U.S.A (Advisor: Dr. Mark R. Wiesner)
2004 - 2006	Post-doctoral Fellow, Hokkaido University, Japan (Advisor: Dr. Yoshimasa Watanabe)

AWARDS & HONORS

2022	Distinguished Engineering Research Award, University of Cincinnati
2022	Master Educator Award, CEAS, University of Cincinnati
2019	Research Award for Early-Career Faculty, CEAS, University of Cincinnati
2014	Dean's Award for Outstanding Teaching, University of Sydney
2013	Best Paper Presentation Award, Korea Society of Environmental Engineers
2010	Certificate of Merit, Division of Environmental Chemistry, ACS
2005	Outstanding Poster Award, Particle Separation 2005, International Water Association

TEACHING

CE265	Membrane Technology for Water and Energy (Duke University, 2010)
CHNG2801/5701	Conservation and Transport Processes (University of Sydney, 2011-2014)
CHNG2805/5705	Industrial Systems and Sustainability (University of Sydney, 2011-2014)
CHNG3801/5801	Process Design (University of Sydney, 2011-2014)
CHNG3806/5806	Management of Industrial Systems (University of Sydney, 2011-2014)
CHNG5008	Nanotechnology in Chemical Engineering (University of Sydney, 2011-2014)
CHNG5601	Membrane Science (University of Sydney, 2011-2014)
CHNG5604	Membrane Engineering Laboratory (University of Sydney, 2011-2014)
ENVE5155/6055	Biological Processes for Water Quality Control (UC, 2015 - current)
ENVE5153/6053	Physical Principles of Environmental Systems (UC, 2015 - current)
ENVE5130/6030	Advanced Membrane Technology (UC, 2018 - current)

SUPERVISING AND MENTORING

(i) Undergraduate Students:

1. George Gates, Chemical and Environmental Engineering, University of Cincinnati, 2020.
2. Kelsie Carlson, Chemical and Environmental Engineering, University of Cincinnati, 2018.
3. Grace Balbo, Chemical Engineering, University of Cincinnati, 2016.
4. Florence Vanderschueren, Environmental Engineering, University of Cincinnati, 2016.
5. Julia Brand, University of Sydney, 2014.
6. Terence Abrams, University of Sydney, 2014.
7. Alma Kang, University of Sydney, 2014.
8. Annabel Lim, University of Sydney, 2013.

(ii) MS Students:

1. George Gates, University of Cincinnati, 2021 – present.
2. Elvis Eghombi, “Advanced Wastewater Recycling and Phosphorus Recovery using Membrane Bioreactor and Magnesium Carbonate-based Pellets”, M.S. Thesis, University of Cincinnati, 2018 – 2020.
3. Kelsie Carlson, MEng, University of Cincinnati, 2016 – 2019.
4. Brindha Murugesan, “Phosphorus Recovery from Municipal Wastewater using Membrane Bioreactor and Magnesium Carbonate Pellets”, M.S. Thesis, University of Cincinnati, 2016 – 2019.
5. Dilip Kumar Duvvuru, MEng, 2016 – 2018.

6. Bingran Chen, "Effects of Chemical Properties of Cyanotoxins on Transport through Granular Activated Carbons", M.S. Thesis, University of Cincinnati, 2015 – 2018.
7. Elisabeth Martin, "Phosphate recovery from water using cellulose enhanced magnesium carbonate pellets", M.S. Thesis, University of Cincinnati, 2015 – 2017.
8. Jien Tzen Wong, "*Titanium Dioxide Nanotube Membranes for Wastewater Recycling*", M.S. Thesis, University of Sydney, 2013 – 2014.
9. Alma Najlaa Kang, "*In-situ Crosslinking Poly(ethylene glycol) Diacrylate as Potential Polymer for Low-pressure Membrane Healing*", M.S. Thesis, University of Sydney, 2013 – 2014.
10. Jun Chen, "*Synthesis of Tatiana Nanotube Mesh for Advanced Oxidation of Wastewater*", M.S. Thesis, University of Sydney, 2011 – 2012.
11. Michelle Liu, "*Characterisation of Uranium Ion Exchange in Carbonate Systems*", M.S. Thesis, University of Sydney, 2011 – 2012.

(iii) PhD Students:

1. Ali Sallakh Niknejad, University of Cincinnati, 2022 – present.
2. Mohammad Pishnamazi, University of Cincinnati, 2022 – present.
3. Elvis Eghombi, University of Cincinnati, 2020 – present.
4. Hyunsik Kim, University of Cincinnati, 2019 – present.
5. Yoontaek Oh, "*Sustainable Power Generation from Salinity Gradient using Reverse Electro-Dialysis and Carbon Nanomaterial-based Electrodes*", Ph.D. Dissertation, University of Cincinnati, 2016 – 2020.
6. Jieun Lee, "*Carbon nanotube-enhanced membrane for advanced water treatment*", Ph.D. Dissertation, University of Sydney, 2011 – 2016.
7. Farideh Heidarpour, "*Recycling of Coal Seam Gas Associated Water by Vacuum Membrane Distillation*", Ph.D. Dissertation, University of Sydney, 2011 – 2016.
8. Tahereh Noeiaghaei, "*Advanced Treatment of Wastewater Effluents by Multi-functional Carbon Nanotube-TiO_2 Nanotube Membranes*", Ph.D. Dissertation, University of Sydney, 2011 – 2015.

(iv) Post-doctoral Fellows:

1. Yanxia Zhao, University of Sydney, 2014 – 2015.

(v) Visiting Scholars:

1. Pyung-Kyu Park, Yonsei University, January – December 2019.
2. Hyun-Chul Kim, Sejong University, July 2016 – April 2018.

3. Yong-Seog Seo, Korean Institute of Energy Research, October 2015 – September 2016.
4. Ji-Hyung Han, Korean Institute of Energy Research, June – July 2017.

PROFESSIONAL SERVICE

(i) Journal Editorial Board:

- Chemical Engineering Journal (Elsevier): Executive Editor – Green and Sustainable Science and Engineering Section.
- Journal of Environmental Engineering (American Society of Civil Engineers): Associate Editor.
- Environmental Engineering Research (Korean Society of Environmental Engineers): Associate Editor.
- Applied Chemistry for Engineering (Korean Society of Industrial and Engineering Chemistry): International Editorial Advisory Board.
- Journal of Civil and Environmental Engineering Research (Korean Society of Civil Engineers): Editorial Board Member

(ii) Conference Organization:

- Organization committee: The 8th International Water Industry Conference 2022, Daegu, South Korea, November 23 – 25, 2022.
- Session co-chair: Water-Energy based Circular Economy for Carbon Neutral Society, Asia-Pacific Forum on Renewable Energy, Jeju, South Korea, September 27 – October 1, 2022.
- Session chair: Environmental, Social, and Economic Impacts of Aged/Transformed Nanomaterial-enabled Consumer Products, The 254th American Chemical Society National Meeting & Exposition, Washington DC, August 20 - 24, 2017.
- Session chair: Advances and Challenges in Separation and Mixing of Salts for the Sustainable Production of Food, Energy and Water, The 254th American Chemical Society National Meeting & Exposition, Washington DC, August 20 - 24, 2017.
- Session co-chair: Advances and Challenges at the Food-Energy-Water Nexus, The 254th American Chemical Society National Meeting & Exposition, Washington DC, August 20 - 24, 2017.
- Session co-chair: Energy and Water Nexus, PRiME 2016/The 230th ECS Meeting, Honolulu, Hawaii, October 2-7, 2016.
- Session co-chair: Advanced & Challenges in Food-Energy-Water Nexus, The 252nd American Chemical Society National Meeting & Exposition, Philadelphia, PA, August 21-25, 2016.

- Scientific committee: The 2015 International Environmental Engineering Conference (IEEC) and Annual Meeting of the Korean Society of Environmental Engineers, Busan, Korea, October 2015.
- Session chair: Sustainable Engineering Solutions for Water and Environment, The US-Korea Conference on Science, Technology, and Entrepreneurship, Atlanta, GA, July 2015.
- Scientific committee: International Conference on Environmental Sciences, Dubai, UAE, January 2014.
- Scientific committee: The 7th IWA International Young Water Professional Conference, Taipei, Taiwan, December 2014.

(iii) Peer Reviewer for Journals: Environmental Science and Technology, Environmental Science and Technology Letters, Chemical Engineering Journal, Chemosphere, Desalination, Journal of Membrane Science, Separation and Purification Technology, Water Research.

(iv) Review Panel: National Science Foundation (NSF), Water Environment Research Foundation (WERF), United State-Israel Binational Agricultural Research and Development Fund, Australian Research Council (ARC), Awards & Recognition Committee, Water Environment Federation (WEF)

(v) Professional Memberships:

- Association of Environmental Engineering and Science Professors (AEESP), 2015 –present.
- American Chemical Society (ACS), 2008 – present.
- American Society of Civil Engineers (ASCE), 2017 – present.
- North American Membrane Society (NAMS), 2020 – present.
- International Water Association (IWA), 2004 – present.
- Water Environment Federation (WEF), 2019 – present.
- Water Environment & Reuse Foundation (WERF), 2015 – present.

RESEARCH GRANTS

- **University of Cincinnati (Since 2015)**

Project title	Funding agency	Period	Role	Budget
Design of pre-treatment technologies for bioenergy production from bio-oil wastewater	University of Cincinnati	5/1/16 – 4/30/17	PI	$6,000
Effects of pH and natural organic matter on degradation kinetics of extracellular cyanotoxins by ultrasound assisted advanced oxidation technologies	National Oceanic and Atmospheric Administration	9/1/16 – 8/31/17	PI	$9,941
Optimization of carbon barriers for effective removal of the dissolved cyanotoxins from Ohio's fresh water	Ohio Department of Higher Education (ODHE) – HABRI	4/1/16 – 3/31/18	PI	$104,949
Kinetic models for oxidative destruction of cyanotoxins in raw drinking water	Ohio Department of Higher Education - HABRI	4/1/16 – 3/31/18	Co-PI	$108,949
Prevention of harmful algal blooms through nutrient zero wastewater treatment using a vertical membrane bioreactor with food waste	U.S. Geological Survey	3/01/16 - 2/28/17	PI	$31,956
Development of high performance and anti-fouling graphene membranes for clean energy production by reverse electrodialysis	Korea Institute of Energy Research	1/1/16 - 12/31/16	PI	$84,785
Point-of-care sensors for biomarkers of environmental and personal exposures assessment	University of Cincinnati	2015 - 2016	Co-PI	$125,000
Design of a self-cleaning membrane assisted bioreactor for enhanced removal of nutrients from wastewater	U.S. Geological Survey	3/1/17 – 2/28/18	PI	$30,816
Development and optimization of redox-couples and carbon nanofiber electrodes in reverse electrodialysis for clean energy production	Korea Institute of Energy Research	4/1/17 – 10/31/18	PI	$127,921
Efficient control of Legionella using a self-cleaning carbon nanotube membrane for health care water systems	University of Cincinnati	2016 – 2017	PI	$49,949
Multi-functional carbon nanotube membranes for sustainable wastewater recycling	University of Cincinnati	8/1/18 – 7/31/19	PI	$15,000
Advanced water and wastewater treatment using hybrid membrane technologies	LOTTE Chemical, National Research Foundation of Korea	5/1/19 - 7/31/20	PI	$215,000
Drone-based DNA analysis	University of Cincinnati	10/1/19 – 3/31/20	Co-PI	$10,000
Efficient removal of emerging per-	Ohio Water	3/1/20 –	PI	$27,654

and poly-fluoroalkyl contaminants using electrically heatable carbon nanotube hollow fiber membrane distillation	Development Agency	12/31/21		
RAPID: Design, fabrication, and testing a prototype of heatable face mask for preventing respiratory diseases contracted through airborne pathogens	National Science Foundation	6/1/20 – 05/31/22	Co-PI	$239,990
Subcontract on DOE DE-FOA-0001905 energy-water desalination hub	Lawrence Berkeley National Laboratory, DOE	6/1/20 – 5/31/21	Co-PI	$156,349
High temperature gradient ceramic membrane distillation for potential reuse of produced water	Department of the Interior, Bureau of Reclamation	8/1/21 – 7/31/23	PI	$249,630
Developing fast responding solutions for removing cyanobacteria, cyanotoxins, and nutrients with coagulation/flocculation/sedimentation by characterizing site-specific bloom-related environmental factors	Ohio Department of Higher Education (ODHE) – HABRI	7/1/21 – 12/31/23	PI	$316,524
Management of harmful algal blooms by claybiopolymer composite through flocculation of cyanobacterial cells and adsorption of phosphorus	Ohio Department of Higher Education (ODHE) - HABRI	7/1/21 – 12/31/23	Co-PI	$194,492
Pegasus, TO#68HERC21F0183, Technical Support for PFAS Treatment Technologies and Nutrient Recovery	US EPA	8/1/21 – 3/31/23	PI	$68,347
Low Energy and High Water Recovery Desalination of Brackish Groundwater Using a Compact and Redox-Driven Electrochemical System	Department of the Interior, Bureau of Reclamation	9/1/22 – 8/31/24	Co-PI	$99,852
Prevention of Legionnaires' Disease in Healthcare Facilities using Innovative Electrically Heatable Point-of-Use Filters	Ohio Bureau of Workers' Compensation	8/1/23 – 7/31/25	PI	$299,632 (pending)

- **University of Sydney, Australia (2011 – 2014)**

Funding agency	Project title (Role)	Period	Amount
Australian Research Council	Training Centre for the Australian Food Processing Industry in the 21st Century	1/1/14 - 12/31/18	$2,997,000 (Co-PI)
Dow Coating Material	Physical and Chemical Processes for Pond Water Recycling	1/1/14 - 12/31/14	$60,000 (PI)
Australia-Korea Foundation	Australia and Korea's Clean Energy Future: The Role of Innovative Technology	1/1/14 - 12/31/14	$7,700 (PI)
University of Sydney	International Research Development Fund	1/1/13 - 12/31/13	$18,000 (PI)
Australian Government/NSW TechVocher Program	Characterization and Modification of Ultrafiltration Membranes	1/1/13 - 12/31/13	$18,000 (PI)
University of Sydney	Major Equipment Grant	2012	$76,000 (PI)
University of Sydney	Early Career Researcher Development Grant	1/1/12 - 12/31/12	$37,000 (PI)
Samsung Cheil Industries, Inc.	Development and performance evaluation of high strength PVDF hollow fiber membrane for water treatment	5/1/11 – 4/30/14	$225,000 (PI)

PATENTS

1. Heatable Face Masks Using Carbon Veil as a Heater for Airborne Pathogen Inactivation. US Provisional Patent Application No. 63/196,155, June 22, 2021. Inventors: **Soryong Chae**, Vesselin Shanov, Yangbo Fang, Hyunsik Kim, Yoontaek Oh.
2. Photocatalytic carbon filters. U.S. Patent Application No. 16/471,131, February 6, 2020. Inventors: **Soryong Chae**, Tahereh Noeiaghaei, Yoontaek Oh.
3. Apparatus, useful for treating water, comprises a settling tank for precipitating aggregate or solid material in the condensed water in which the flocculation process is completed, and a separating tank comprising two-stage filter membrane. Patent Number(s): KR2012046838-A and KR1276499-B1, Inventors: **CHAE S R**, KIM S J, KIM K T. 11 May 2012, South Korea.
4. Separation membrane cleaning device, has blocking plate provided with variable plate that is formed with acid hole, and sealing space part adhered with fixing plate corresponding to acid hole. Patent Numbers: KR2012045326-A and KR1210205-B1. Inventors: KIM S J, AHN C H, YIM S K, KIM K T, KANG M S, CHAE K J, **CHAE S R**. 09 May 2012, South Korea.
5. Inclined plate type settling basin for improving efficiency of liquid and solid separation, has flux that is reduced when residence time of flowed raw water is increased between raw water inlet and slope precipitate module. Patent Numbers: KR2012044598-A and KR1172198-B1. Inventors: **CHAE S R**, KANG M S, KIM K T. 08 May 2012, South Korea.
6. Determination of condition of advanced oxidation process involves adjusting oxidation condition to make measured final process concentration of p-chlorobenzoic acid similar to final calculation concentration of p-chlorobenzoic acid. Patent Numbers: KR2011049726-A and KR1169877-B1. Inventors: **CHAE S R**, YIM S K, MOON J H, CHO M, KIM J H, RYONG C S, GYUN I S, HUI M J, HONG K J. 12 May 2011, South Korea.
7. Continuous photo bioreactor for carbon dioxide removal to inhibit global warming and mass-production of microalgae. Patent Numbers: KR2005081766-A and KR622992-B1, Inventors: SHIN H S, **CHAE S R**. 19 Aug 2005, South Korea.
8. Advanced wastewater treatment apparatus of which size can be reduced by vertically constructing structure of membrane bio-reactor such that anoxic tank and aeration tank are vertically arranged. Patent Numbers: KR2005048045-A and KR540549-B1. Inventors: **CHAE S R**, CHUNG J H, HEO Y R, KANG S T, LEE E S, LEE S M, SHIN H S, 24 May 2005, South Korea.
9. Condensate water containing organic acid derived from organic waste and using method thereof. Patent Numbers: KR2004072385-A. Inventors: **CHAE S R**, MIN B U, SHIN H S, YOUN J H. 18 Aug 2004, South Korea.

PUBLICATIONS

(i) Thesis

1. Characteristics of Nutrient Removal and Membrane Fouling in a Vertical Membrane Bioreactor, Ph.D. dissertation, Department of Civil and Environmental Engineering, KAIST, 2004 (Supervisor: Prof. Hang-Sik Shin).
2. Development of operating factors for the continuous CO_2 fixation by *Euglena gracilis* Z, M.S thesis, Department of Civil and Environmental Engineering, KAIST, 2000 (Supervisor: Prof. Hang-Sik Shin).

(ii) Book chapters

1. **So-Ryong Chae**, Yong-tae Ahn, Yuhoon Hwang, Duksoo Jang, Fangang Meng, Jeffrey Shi, Sang-Hyup Lee, and Hang-Sik Shin. Chapter 5. Nutrient removal and disinfection by MBR, Membrane Biological Reactors: Theory, Modelling, Design, Management and Applications to Wastewater Reuse. Editors: Faisal I. Hai, Kazuo Yamamoto, Chung-Hak Lee, IWA Publishing, London, UK (ISBN: 9781780409177), 155 – 181, 2019.
2. **So-Ryong Chae**, Ernest M. Hotze, and Mark R. Wiesner. Possible applications of fullerene nanomaterials in water treatment and reuse, Nanotechnology Applications for Clean Water (2nd edition). William Andrew Publishing, New York, U.S.A. (ISBN: 978-1-4557-3116-9), 2014.
3. **S. R. Chae**, Y. T. Ahn, C. W. Suh, H. S. Shin. Characteristics of nutrient removal and behaviors of intercellular materials and population dynamics of microorganisms in a vertical submerged membrane bioreactor (VSMBR) in *Trends in Biotechnology Research,* Edwin C. Hearns (Ed.), NOVA Science Publisher, New York, U.S.A. (ISBN: 978-1-62808-666-9)1- 37, 2006.

(iii) Peer-reviewed journal papers (* as the corresponding author)

1. **Soryong Chae***, Minghao Kong, Hyunsik Kim, Charifa Hejase, Kyoung-Yeol Kim, Tiezheng Tong, Sargeant Green, Robert Young, Thomas Borch, and Dionysios Dionysiou. Challenges and Opportunities in Recycling and Reuse of Reclaimed Water for Agriculture in the United States. Nature Water, *submitted*.
2. Seyed Majid Ghoreishian[a], Mohammad Norouzi[b], **Soryong R. Chae**[*], Yun Suk Huh[*]. Recent progress in the engineering of visible-light-responsive photocatalytic membrane technology for efficient environmental remediation. Energy & Environmental Science, *submitted*.
3. Sungwon Kang, Bongjae Lee, Kwang-Ho Ahn, Seongwon Im, Bokseong Kim, Tae-Hyun Kim, Yuhoon Hwang, and **Soryong Chae**. Green facile synthesis of copper-substituted Prussian blue analog immobilized ion exchange resins for high-performance ammonium recovery from wastewater: Adsorption kinetics, isotherms, and regeneration. Chemical Engineering Journal, 457, 141128, 2023. https://doi.org/10.1016/j.cej.2022.141128
4. **Soryong Chae*,** Hanki Kim, Ji-Yeon Choi, Jin-Gi Hong, Jaewon Jang, In S. Kim, Mitsuru Higa, Mohammad Pishnamazi, Ramali Chandula Walgama, Chulsung Bae, Jin-Soo Park. Clean power generation from salinity gradient using reverse electrodialysis technologies: Recent advances, bottlenecks, and future direction. Chemical Engineering Journal, 452(4), 139482, 2023. https://doi.org/10.1016/j.cej.2022.139482
5. Zhang, Tianyu; Li, Zhengyuan; Lyu, Xiang; Raj, Jithu; Zhang, Guangqi; Kim, Hyunsik; Wang, Xiangning; **Chae, Soryong**; Lemen, Lisa; Shanov, Vesselin; Wu, Jingjie. The Conventional Gas Diffusion Electrode May Not Be Resistant to Flooding during CO_2/CO Reduction. Journal of the Electrochemical Society, 169(10), 104506, 2022.
6. Reza Sallakhniknezhad, Ali Sallakh Niknejad, Masoud Barani, Esmaeil Ranjbari, Saeed Bazgir, Ali Kargari, Mohsen Rasouli, **Soryong Chae***. Hypersaline drilling mud water treatment using pretreatment-free DCMD process. Desalination, 539, 115938, 2022. https://doi.org/10.1016/j.desal.2022.115938
7. Sojin Min, Hosung Lee, Dowon Chae, Jeongwon Park, Sang Hyun Lee, Hyun-Suk Oh, Kibaek Lee, Chung-Hak Lee, **Soryong Chae**, Pyung-Kyu Park. Innovative biofouling control for membrane bioreactors in cold regions by inducing environmental adaptation in quorum quenching bacteria. Environmental Science &Technology, 56(7), 4396 – 4403, 2022. https://doi.org/10.1021/acs.est.1c07786
8. Elvis Eghombi, Hyunsik Kim, Yang-Hun Choi, Mi-Hwa Baek, Mallikarjuna N. Nadagouda, Pyung-Kyu Park, and **Soryong Chae***. Efficient phosphorus recovery from municipal wastewater using enhanced biological phosphorus removal in an anaerobic/anoxic/aerobic

membrane bioreactor and magnesium-based pellets. Membranes, 12, 201, 2022. https://doi.org/10.3390/membranes12020210

9. Reza Sallakhniknezhad, Manijeh Khorsi, Ali Sallakh Niknejad, Saeed Bazgir, Ali Kargari, Mohsen Sazegar, Mohsen Rasouli, and **Soryong Chae***. Enhancement of physical characteristics of nanofibrous membranes using various post-treatments for membrane distillation applications. Membranes, 11(12), 969, 2021. https://www.mdpi.com/2077-0375/11/12/969
10. Charifa A. Hejase, Katelin A. Weitzel, Sean C. Stokes, Brandi M. Grauberger, Robert B. Young, Miguel S. Arias-Paic, Minghao Kong, **Soryong Chae**, Todd Bandhauer, Tiezheng Tong, Daniel R. Herber, Sherry Stout, Ariel Miara, Zhe Huang, Anna Evans, Parthiv Kurup, Michael Talmadge, Alicen Kandt, Jennifer Stokes-Draut, Jordan Macknick, Thomas Borch, Dionysios D. Dionysiou. Opportunities for Treatment and Reuse of Agricultural Drainage in the U.S. ACS ES&T Engineering, 2(3), 292-305, 2021. https://doi.org/10.1021/acsestengg.1c00277
11. Bingran Chen, Ying Hong, Maria Meyer, Kevin Reynolds, Hee-Jong Son, **Soryong Chae***. Fate and Transport of Cyanotoxins and Natural Organic Matter through Virgin and Reactivated Granular Activated Carbons. ACS ES&T Water, 1(12), 2513–2522, 2021. https://doi.org/10.1021/acsestwater.1c00276
12. Yoontaek Oh, Ji-hyung Han, Han-ki Kim, Namjo Jeong, Jin-Soo Park, and **Soryong Chae***. Active Control of Irreversible Faradic Reactions to Enhance the Performance of Reverse Electrodialysis for Energy Production from Salinity Gradients. Environmental Science & Technology, 55(16), 11388-11396, 2021. https://pubs.acs.org/doi/10.1021/acs.est.1c02734
13. Joowan Lim, Kwangpyo Son, Seung Mo Kang, Jeongwon Park, Sojin Min, Hyeongrak Cho, Seung-Hyun Kim, Sangho Lee, **Soryong Chae**, Pyung-Kyu Park. Correlation between the feed composition and membrane wetting in a direct contact membrane distillation process. Environmental Science: Water Research & Technology, 7, 1020 – 1031, 2021. https://pubs.rsc.org/en/content/articlehtml/2021/ew/d0ew01125h
14. **Soryong Chae***, Brindha Murugesan, Dilip Kumar Duvvuru, Mallikarjuna N. Nadagouda. Advanced phosphorus recovery from municipal wastewater using anoxic/aerobic membrane bioreactors and magnesium-based pellets. ACS ES&T Water, 1(8), 1657-1664, 2021. https://pubs.acs.org/doi/full/10.1021/acsestwater.0c00300
15. Kelsie M. Carlson, Laura A. Boczek, **Soryong Chae***, and Hodon Ryu. Legionellosis and recent advances in technologies for *Legionella* control in premise plumbing systems: A review. Water, 12(3), 676, 2020. https://www.mdpi.com/2073-4441/12/3/676
16. Mun-Sik Shin, Seohee Lim, Jong-Hyeok Park, Hyoung-Juhn Kim, **Soryong Chae**, and Jin-Soo Park. Thermally crosslinkable quaternized polybensimidazole as ionomer binder for solid

alkaline fuel cells. International Journal of Hydrogen and Energy, 45(20), 11773 – 11783, 2020. https://doi.org/10.1016/j.ijhydene.2020.02.081

17. Abayomi Babatunde Alayande, **Soryong Chae**, and In S. Kim. Surface morphology-dependent spontaneous bacterial behaviors on graphene oxide membranes. Separation and Purification Technology, 226, 68-74, 2019. https://doi.org/10.1016/j.seppur.2019.05.072
18. Jongmoon Choi, Yoontaek Oh, **Soryong Chae**, Seungkwan Hong. Membrane capacitive deionization-reverse electrodialysis hybrid system for improving energy efficiency of reverse osmosis seawater desalination, Desalination, 462, 19-28, 2019. https://doi.org/10.1016/j.desal.2019.04.003
19. Yoontaek Oh, Ryan Noga, Vesselin Shanov, Hodon Ryu, Harish Chandra, Brijesh Yadav, Jagjit Yadav, and **Soryong Chae***. Electrically heatable carbon nanotube point-of-use filters for effective separation and in-situ inactivation of *Legionella pneumophila.* Chemical Engineering Journal, 366, 21-26, 2019. https://doi.org/10.1016/j.cej.2019.02.054
20. **Soryong Chae***, Tahereh Noeiaghaei, Yoontaek Oh, In S. Kim, and Jin-Soo Park. Effective Removal of Emerging Dissolved Cyanotoxins from Water using Hybrid Photocatalytic Membranes. Water Research, 149, 421-431, 2019. https://doi.org/10.1016/j.watres.2018.11.016
21. Yoontaek Oh, Yejin Jeong, Soo-Jin Han, Chan-Soo Kim, Han-Ki Kim, Ji-Hyung Han, Kyo-Sik Hwang, Nam-Jo Jeong, Jin-Soo Park, and **Soryong Chae***. Effects of divalent cations on electrical membrane resistance in reverse electrodialysis for salinity power generation. Industrial & Engineering Chemistry Research. 57, 15803-15810, 2018. https://pubs.acs.org/doi/full/10.1021/acs.iecr.8b03513
22. Elisabeth Martin, Jacob Lalley, Wenhu Wang, Mallikarjuna Nadagouda, Endalkachew Sahle-Demessie, **So-Ryong Chae*.** Phosphate recovery from water using cellulose enhanced magnesium carbonate pellets: Kinetics, isotherms, and desorption. Chemical Engineering Journal, 352, 612-624, 2018. https://doi.org/10.1016/j.cej.2018.06.183
23. Ki-Bum Park, Changkyoo Choi, Hye-Weon Yu, **So-Ryong Chae**, In S. Kim. Optimization of chemical cleaning for reverse osmosis membranes with organic fouling using statistical design tools. Environmental Engineering Research, 23(4), 474-484, 2018. https://doi.org/10.4491/eer.2017.098
24. Yongmoon Jung, Abayomi Babatunde Alayande, **Soryong Chae**, In S. Kim. Applications of nisin for biofouling mitigation of reverse osmosis membranes. Desalination, 429, 52-59, 2018. https://doi.org/10.1016/j.desal.2017.12.003
25. Noe T. Alvarez, Ryan Noga, **So-Ryong Chae**, George Sorial, Hodon Ryu, and Vesselin Shanov. Heatable Carbon Nanotube Composite Membranes for Sustainable Recovery from

Biofouling. Biofouling, 33(10), 847-854, 2017. https://doi.org/10.1080/08927014.2017.1376322

26. Tahereh Noeiaghaei, Abhijit Mukherjee, Navdeep Dhami, **So-Ryong Chae**. Biogenic deterioration of concrete and its mitigation technologies. Construction & Building Materials, 149, 575-586, 2017. https://doi.org/10.1016/j.conbuildmat.2017.05.144
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3. Yoontaek Oh, Ji-hyung Han, Han-ki Kim, Namjo Jeong, Chan-Soo Kim, David A. Vermaas, Jin-Soo Park, and **Soryong Chae**. Energy Production from Salinity Gradients using Reverse Electrodialysis Technologies: Effects of Irreversible Faradaic Reactions and Multivalent Ions. The 10th Asia-Pacific Forum on Renewable Energy, Jeju, South Korea, October 31 - November 3, 2021.
4. Yoontaek Oh, Noe T. Alvarez, Vesselin Shanov, and **Soryong Chae**. In-situ Inactivation of Pathogens on Membrane Surfaces using Electrically Active Carbon Nanotube Sheets. Sustainable Nanotechnology Organization, November 4, 2021.
5. **Soryong Chae**, Dionysios D. Dionysiou 1, Jiyoung Lee, Arthur Helmicki, and Victor Hunt. Developing fast responding solutions for removing cyanobacteria, cyanotoxins, and nutrients with coagulation/flocculation/sedimentation by characterizing site-specific bloom-related environmental factors. Confluence, December 8, 2021.
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12. Yoontaek Oh, Vesselin Shanov, Hodon Ryu, and **Soryong Chae**. Simultaneous removal and inactivation of Legionella pneumophila using electrically heatable carbon nanotube interfaces. 258th ACS National Meeting & Exposition, San Diego, CA, August 25-29, 2019.
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34. **So-Ryong Chae** and Mark R. Wiesner. Membranes and Engineered Nanomaterials for Advanced Water Treatment. US-Korea Conference on Science, Technology, and Entrepreneurship, Atlanta, GA, July 29-August 1, 2015.
35. **So-Ryong Chae** and Mark R. Wiesner. Transport, reactivity, and bioactivity of heterogeneous carbon nanoparticles in water. AEESP Research and Education Conference, Yale University, June 13-16, 2015.
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54. **S. R. Chae**, B. W. Choi, H. Yamamura, and Y. Watanabe. Fouling Characteristics of Pressurized and Submerged PVDF (Polyvinylidene Fluoride) Microfiltration Membranes in a Pilot-scale Drinking Water Production System. IWA International Conference on Particle Separation, Toulouse, France, July 9-12, 2007.
55. **S. R. Chae**, K. Ikeda, G. Ozawa, Y. Watanabe. Fouling Characteristics of PVDF (Polyvinylidene Fluoride) Microfiltration Membranes in a Pilot-scale Drinking Water Production System with Pre-Coagulation/Sedimentation using PSI (polysilicato iron) and PACl (polyaluminium chloride). IWA World Water Congress and Exhibition, Beijing, China, September 10-14, 2006.
56. **S. R. Chae** and H. S. Shin. Kinetic estimation of low excess sludge yield and extracellular polymeric substance accumulation in a vertical submerged membrane bioreactor (VSMBR). IWA World Water Congress and Exhibition, Beijing, China, September 10-14, 2006.
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58. **S. R. Chae**, S. T. Kang, S. M. Lee, E. S. Lee, S. E. Oh, Y. Watanabe, H. S. Shin. High reuse potential of effluent from an innovative vertical membrane bioreactor treating municipal wastewater. IWA Specialty Conference "Wastewater Reclamation & Reuse for Sustainability, Jeju, Korea, November 8-11, 2005.

59. Y. T. Ahn, S. T. Kang, **S. R. Chae**, and H. S. Shin. Simultaneous High-Strength Organic and Nitrogen Removal with combined Anaerobic Upflow Bed Filter and Aerobic Membrane Bio-reactor (UBF-MBR). IWA Specialty Conference "Wastewater Reclamation & Reuse for Sustainability, Jeju, Korea, November 8-11, 2005.
60. S. T. Kang, W. T. Lee, **S. R. Chae**, and H. S. Shin. Positive roles of biofilm during the operation of membrane bioreactor for water reuse. IWA Specialty Conference "Wastewater Reclamation & Reuse for Sustainability, Jeju, Korea, November 8-11, 2005.
61. Y. T. Ahn, C. Y. Lee, **S. R. Chae** and H. S. Shin. Coagulant and powdered activated carbon addition as pretreatment for ultrafiltration process in drinking water production. PACIFICHEM 2005, Honolulu, Hawaii, December 15-20, 2005.
62. **S. R. Chae**, Y. T. Ahn, H. S. Shin. Characteristics of membrane fouling in a vertical-type submerged membrane bioreactor. IWA specialized conference on Water Environment - Membrane Technology 2004, Seoul, Korea, June 7-10, 2004.
63. H. S. Shin, Y. T. Ahn, **S. R. Chae**, S. T. Kang. Biological treatment of high-strength nitrogen wastewater using a combined anaerobic/aerobic system. The first Asian Environment Research Alliance Partnership Symposium, 237-244, Taipei, Taiwan, January 6-7, 2003.
64. H. S. Shin, **S. R. Chae**, J. O. Kim, B. C. Paik, Y. C. Song and H. S. Park. Simultaneous organic and strong nitrogen removal from sewage in a pilot-scale BNR process with food waste. IWA 6th International Symposium on Strong Nitorgenous and Agro-Wastewater, Seoul, Korea, June 11-13, 2003.
65. Hang-Sik Shin, **So-Ryong Chae**, Seok-Tae Kang, Sae-Eun Oh, Sang-Min Lee, and Eui-Sin Lee. Simultaneous organic and nutrients removal by the vertical type submerged membrane bioreactor. IWA Asia-Pacific Regional conference, ASIAN WATERQUAL 2003, Bangkok, Thailand, October 19-23, 2003.
66. H. S. Shin, Y. T. Ahn, S. T. Kang, **S. R. Chae**. Performance of the combined anaerobic system treating high-strength nitrogen-rich wastewater. IWA Asia-Pacific Regional conference, ASIAN WATERQUAL, Bangkok, Thailand, October 19-23, 2003.
67. H. S. Shin, **S. R. Chae**, H. S. Jeong, S. T. Kang, J. L. Lim and B. C. Paik. Behaviors of intracellular materials and nutrients in BNR process supplied with domestic sewage and food waste. WEFTEC2002, Chicago, Illinois, September 28 - October 2, 2002.
68. Hang-Sik Shin, **So-Ryong Chae**, Jae-Lim Lim, Se-Yong Nam, and Seok-Tae Kang. Effect of anaerobic fermented leachate of food waste on biological nutrient removal. ASIAN WATERQUAL 2001, Fukuoka, Japan, September 12-15, 2001.

69. Hang-Sik Shin, **So-Ryong Chae**, Se-Yong Nam, Seok-Tae Kang, B. C. Paik, and S. H. Lee. Nutrient removal using anaerobically fermented leachate of food waste in BNR Process. The 1st IWA Asia Environmetal Technology 2001, Singapore, October 30 - November 2, 2001.
70. Hang-Sik Shin, **So-Ryong Chae**, Bong-Sun Park and Eung-Ju Hwang. Estimation of operating factors for the continuous carbon dioxide fixation by *Euglena gracilis* Z. WEFTEC2000, Anaheim, California, October 14-18, 2000.

(v) Keynote lecturer, invited speaker, etc.:

1. Carbon Neutral Institute, Ulsan National Institute of Science and Technology, December 8, 2022.
2. Department of Chemical and Materials Engineering, University of Kentucky, November 9, 2022.
3. Asia-Pacific Forum on Renewable Energy (AFORE), Jeju, South Korea, September27 – October 1, 2022.
4. The Joint Symposium of 18th ICT (International Conference on Toxicogenomics) and 14th ICoEHS (International Conference on Environmental Health Sciences), Seoul, South Korea, October 25 – 27, 2022
5. Department of Environmental Engineering, EWHA Womans University, Seoul, South Korea, October 25, 2022.
6. Department of Civil Engineering, New Mexico State University, August 5, 2022.
7. Fall Meeting of the Membrane Society of Korea, November 18 – 20, Daejeon, South Korea, 2020.
8. International Environmental Engineering Conference & Annual Meeting of the Korean Society of Environmental Engineers. Busan, South Korea, December 10-13, 2019.
9. The 7th Busan Global Water Forum, Busan, South Korea, September 18-19, 2019.
10. Department of Civil and Environmental Engineering, University of Toledo, November 8, 2018.
11. American Industrial Hygiene Association (AIHA) - Ohio Valley Section meeting, March 21, 2018.
12. The 2017 International Environmental Engineering Conference, Jeju, South Korea, November 16, 2017.
13. The 5th Busan Global Water Forum, Busan, South Korea, September 7, 2017.
14. CEREGE, Aix-en-Provence, France, December 13, 2016.
15. Swette Center for Environmental Biotechnology, Arizona State University, August 13, 2015.
16. Department of Civil and Environmental Engineering, Penn State University, July 22, 2015.

17. Japan-YWP 2nd International Symposium, Tokyo, Japan, June 15 - 16, 2013.
18. CSIRO Land and Water, Sutherland, Australia, March 9, 2011.
19. Academic Summer School Particle Separation in Water and Wastewater Treatment, Delft, The Netherlands, July 6-11, 2008.
20. The 2nd Innovation of Membrane Technology for Water and Wastewater Treatment, Sapporo, Japan, August 27-29, 2007.