CHANHYUK PARK, PhD

Associate Professor
Department of Environmental Science and Engineering, Ewha Womans University
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EDUCATION

Ph.D.	2014	Department of Civil and Environmental Engineering, University of California, Berkeley, CA
M.S.	2006	Department of Civil and Environmental Engineering, Korea University, Seoul, South Korea
B.S.	2004	Department of Civil and Environmental Engineering, Korea University, Seoul, South Korea

APPOINTMENTS

2025 – 2026	Visiting Professor, Dept. of Civil and Environmental Engineering, Duke University, Durham, NC
2022 – present	Associate Professor, Dept. of Environmental Science and Engineering, Ewha Womans University
2018 – 2022	Assistant Professor, Dept. of Environmental Science and Engineering, Ewha Womans University
2017 – 2018	Associate Professor, Dept. of Energy and Environmental Engineering, KIST School
2015 – 2018	Adjunct Professor, Graduate School of Energy and Environment (Green School), Korea University
2015 – 2018	Senior Staff Scientist, Water Cycle Research Center, Korea Institute of Science and Technology (KIST)
2009 – 2014	Student Design Trainee, San Francisco Public Utilities Commission, City and County of San Francisco
2006 – 2015	Staff Scientist, Water Cycle Research Center, Korea Institute of Science and Technology (KIST)

AWARDS AND HONORS

Awards

2024	World Water Day Award, Ministry of Environment, Republic of Korea
2024	Ewha Young Fellow Award, Ewha Womans University
2023	Outstanding Safety Laboratory, Ewha Womans University
2023	Outstanding Research Award, Ewha Womans University
2023	Distinguished Service Award, Korean Wetland Society
2023	Teaching Excellence Award, College of Engineering, Ewha Womans University
2021	Best Patent Award, SK Hynix, Inc.
2018	Excellence in Review Award, Korean Society of Water and Wastewater
2012	Graduate Assembly Travel Award, University of California, Berkeley
2012	Conference Travel Award, University of California, Berkeley
2010 – 2014	International Graduate Student Fellowship, University of California, Berkeley
2008	Excellence in Research Group Award, Korea Institute of Science and Technology
2001	Undergraduate Student Scholarship, Korea University

Advisee Awards

2025	Soyoun Kim, 2025 Travel Award, *Membranes*
2025	Soyoun Kim, Visiting Scholar (PhD Student) Fellowship, National Research Foundation of Korea
2024	Soyoun Kim, Best Poster Award, Korean Society of Environmental Engineers
2024	Yoojin Lee, Best Oral Presentation Award, Korean Society of Environmental Engineers
2024	Yeon So, Best Oral Presentation Award, Korean Society of Water Environment
2023	Yeon So, Best Poster Award, The Membrane Society of Korea
2023	Yeon So, Best Poster Award, Korean Society of Environmental Engineers
2023	Soyoun Kim, Best Graduate Student Paper Award, Ewha Womans University
2023	Soyoun Kim, Best Poster Award, The Membrane Society of Korea
2022	Minju Cha, Fulbright Graduate Student Program Award, Korean-American Educational Commission
2020	Minju Cha, Ewha Academic Excellence Scholarship, Ewha Womans University

PROFESSIONAL AFFILIATIONS AND SERVICE

2024 – present	Executive Committee on Academic Affairs, The Membrane Society of Korea
2024 – present	Executive Committee on Woman Engineers, Korean Society of Environmental Engineers
2023 – present	Executive Committee on Academic Affairs, Member (2023–), Korean Wetlands Society
2022, 2025	Guest Editor, *Membranes*
2020	Guest Editor, *Membrane and Water Treatment*
2017 – present	Member, Korean Society of Water and Wastewater
2016 – 2018	Chair, International Water Association (IWA) Young Water Professionals of Korea
2016 – present	Member, The Membrane Society of Korea
2016 – present	Member, International Water Association (IWA)
2015 – present	Member, Korean Society of Environmental Engineers
2015 – present	Member, American Water Works Association (AWWA)
2015 – present	Member, Korean Society of Water Environment

MAJOR UNIVERSITY SERVICE

2023 – present	Faculty Advisor to the Ecube Club, Ewha Womans University
2024 – 2025	Member, Faculty Evaluation Committee, Ewha Womans University
2023 – 2025	Associate Dean, College of Engineering, Ewha Womans University
2023 – 2025	Deputy Director, Center for Innovation in Engineering Education, Ewha Womans University
2023 – 2025	Member, Academic Planning Committee, Ewha Womans University
2023 – 2025	Member, Advisory Committee for Undergraduate Student, Ewha Womans University
2023 – 2025	Member, Safety Management Committee, Ewha Womans University
2023 – 2025	Faculty Advisor to the Preparation Course for Patent Attorneys, Ewha Womans University
2020 – 2024	Member, Undergraduate Admissions Committee, Ewha Womans University
2020 – 2022	Associate Vice President for Admissions Policy, Ewha Womans University
2020 – 2021	Undergraduate Admissions Officer, Ewha Womans University

COURSES TAUGHT

CSE 36340	Global Woman Engineer and Entrepreneurship (upper-division undergraduate; 1 unit)
ESE 35336	Introduction to Energy Engineering (lower-division undergraduate; 3 units)
ESE 36343	Basic Principle in Process Calculation (lower-division undergraduate; 3 units)
ESE 32918	Environmental Fluid Mechanics (lower-division undergraduate; 3 units)
ESE 33780	Water Treatment Engineering (upper-division undergraduate; 3 units)
ESE 34878	Environmental Microbiology and Lab (upper-division undergraduate; 3 units)
ESE 38450	Lab for Environmental Engineering I (lower-division undergraduate; 3 units)
ESE 38453	Lab for Environmental Engineering II (upper-division undergraduate; 3 units)
ESE 38456	Biological Wastewater Treatment Engineering (upper-division undergraduate; 3 units)
ESE 39381	General Chemistry for Engineers II (lower-division undergraduate; 3 units)
ESE 39382	General Chemistry for Engineers Lab II (lower-division undergraduate; 1 unit)
ESE G15270	Advanced Water Treatment (graduate; 3 units)
ESE G17607	Advanced Drinking Water Treatment (graduate; 3 units)
ESE G17870	Water Environmental Plant Engineering (graduate; 3 units)
ESE G17871	Water Reclamation and Reuse (graduate; 3 units)
ESE G18534	Advanced Water and Wastewater Treatment (graduate; 3 units)

RESEARCH SUPERVISION

Current Graduate Students

Soyoun Kim	2022/09 – present	novel cleaning agents, practical solutions for ceramic membranes
Hyeyool Kim	2024/09 – present	nanocoating, ceramic membrane, semiconductor wastewater treatment

Current Undergraduate Students

Yewon Kim	2025/01 – present	novel 2D nanomaterials
Jieun Lee	2025/04 – present	micro-/nano-plastics, microplastic recycling

Hyeonji Yun	2025/04 – present	micro-/nano-plastics, microplastic filter
Jeong-In Choi	2025/04 – present	micro-/nano-plastics, microplastic recycling

Former Graduate Students

Yeon So	2023/03 – 2025/08	
Yejin Hyeon	2022/03 – 2024/02	Samsung Electronics
Jihyeon Lee	2022/03 – 2024/02	
Yoojin Lee	2022/03 – 2024/02	Associate, LG Energy Solution
Heejin Kook	2020/09 – 2022/08	Senior Associate, LG Chem
Minju Cha	2020/03 – 2022/02	PhD Candidate, University of California, Los Angeles, CA
Soyoun Kim	2020/03 – 2022/02	PhD Candidate, Ewha Womans University

Former Undergraduate Students

Dabi Kim	2024/11 – 2025/07	
Yebin Jeong	2024/07 – 2025/07	
Seung Yeon Kim	2024/01 – 2024/12	MS Student, Seoul National University
Hyeyool Kim	2024/01 – 2024/08	MS Student, Ewha Womans University
Hee Won Lee	2023/01 – 2023/07	Consultant, Yoon & Yang ESG Center
Yeon So	2021/07 – 2023/02	
Eunjin Ok	2021/07 – 2022/02	Research Engineer, Hyundai Motor Group
Hyeonji Kim	2021/07 – 2021/12	Research Engineer, Hyundai Mobis Company
Yoojin Lee	2021/03 – 2022/02	Associate, LG Energy Solution
Jeean Lee	2020/10 – 2020/11	
Gyeongseon Chang	2020/07 – 2020/09	Technical Leader, SK Hynix, Inc.
Minju Lee	2020/03 – 2021/01	
Jeongweon Kim	2020/03 – 2020/08	MS Student, Seoul National University
Heejin Kook	2019/08 – 2019/12	Senior Associate, LG Chem
Subin Jo	2019/02 – 2020/01	
Hyerin Yoon	2019/02 – 2020/01	Manager, HD Hyundai Heavy Industries
Minju Cha	2018/07 – 2020/02	PhD Candidate, University of California, Los Angeles
Soyoun Kim	2018/05 – 2020/02	PhD Candidate, Ewha Womans University

REVIEWER FOR SCHOLARLY JOURNALS (SELECTED)

ACS ES&T Water; ACS Sustainable Chemistry & Engineering; Bioresource Technology; Chemical Engineering Journal; Chemosphere; Desalination; Environmental Engineering Research; Environmental Science & Technology; Journal of Environmental Chemical Engineering; Journal of Hazardous Materials; Journal of Membrane Science; Journal of Water Process Engineering; Separation and Purification Technology; Water Research; Water Science and Technology

PEER-REVIEWED PUBLICATIONS

** indicates corresponding author*

1. H. Kim, S. Kim, C. Park*, 2025. Development of ceramic hollow-fiber nanofiltration membranes containing a functionalized MoS_2 nanomaterial for semiconductor wastewater treatment. Sep. Purif. Technol. 374, 133702. https://doi.org/10.1016/j.seppur.2025.133702.
2. S. Han, B. Jung, C. Park, M. Jang, C.M. Park, S.-N. Nam, Y. Yoon, 2025. Pump-less forward osmosis and low-pressure membrane hybrid system for the removal of selected pharmaceuticals from water. Sep. Purif. Technol. 372, 133499. https://doi.org/10.1016/j.seppur.2025.133499.
3. Y. Kim, B. Jung, C. Park, C.M. Park, M. Jang, B.-M. Jun, Y. Yoon, 2025. Removal of ketoprofen and propranolol in an ultrafiltration-MXene (Ti_3C_2/V_2C) hybrid system. Desalination 613, 119088. https://doi.org/10.1016/j.desal.2025.119088.
4. J. Choi, S. Jeong, S. Jang, C. Park, S. Jeong, S. IM, 2025. Electrochemical mineral carbonation: A sustainable approach to CO_2 capture and utilization. Carbon Capture Sci. Technol. 16, 100444. https://doi.org/10.1016/j.ccst.2025.100444.

5. Y. So, S.Y. Kim, S. Kim, C. Park*, 2025. Innovative approaches to high-speed ceramic membrane filtration for microplastic mitigation in urban wastewater treatment facilities. Sep. Purif. Technol. 363, 132013. https://doi.org/10.1016/j.seppur.2025.132013.

6. Y. So, C. Park*, 2025. Innovative bismuth oxyiodide-coated tubular ceramic nanofiltration membrane for improved treatment of semiconductor wastewater. Sep. Purif. Technol. 361, 131553. https://doi.org/10.1016/j.seppur.2025.131553.

7. S.Y. Kim, S. Kim, C. Park*, 2025. Evaluation of ceramic membrane filtration for alternatives to microplastics in cosmetic formulations using FlowCam analysis. Membranes 15 (1), 35. https://doi.org/10.3390/membranes15010035.

8. Y. Kim, S.-N. Nam, B. Jung, C.M. Park, M. Jang, C. Park, S. Chae, Y. Huang, B.-M. Jun, Y. Yoon, 2024. Removal of contaminants of emerging concerns and dyes by MXene-based membranes in water: A review. Sep. Purif. Technol. 351, 128125. https://doi.org/10.1016/j.seppur.2024.128125.

9. J.W. Yang, C. Park, E.H. Jho, 2024. Removal technologies of microplastics in soil and water environments: review on sources, ecotoxicity, and removal technologies. Appl. Biol. Chem. 67, 106. https://doi.org/10.1186/s13765-024-00957-9.

10. H. Kim, S. Kim, C. Park*, 2024. Advancements and challenges in ceramic membranes incorporating two-dimensional nanomaterials for semiconductor wastewater treatment: A critical review. J. Water Process Eng. 68, 106308. https://doi.org/10.1016/j.jwpe.2024.106308.

11. S. Kim, Y. Hyeon, H. Rho, C. Park*, 2024. Ceramic membranes as a potential high-performance alternative to microplastic filters for household washing machines. Sep. Purif. Technol. 344, 127278. https://doi.org/10.1016/j.seppur.2024.127278.

12. B.-M. Jun, D. Kim, J. Shin, K. Chon, C. Park, H. Rho, 2024. Removal of trivalent chromium ions in model contaminated groundwater using hexagonal boron nitride as an adsorbent. Chemosphere 361, 142539. https://doi.org/10.1016/j.chemosphere.2024.142539.

13. S.-N. Nam, B.-M. Jun, C.M. Park, M. Jang, K.-S. Cho, J.Y. Lee, C. Park, S.A. Snyder, A. Son, Y. Yoon, 2024. Removal of bisphenol A via adsorption on graphene/(reduced)graphene oxide-based nanomaterials. Sep. Purif. Rev. 53 (3), 231-249. https://doi.org/10.1080/15422119.2023.2242350.

14. B.-M. Jun, S.H. Chae, D. Kim, J.-Y. Jung, T.-J. Kim, S.-N. Nam, Y. Yoon, C. Park, H. Rho, 2024. Adsorption of uranyl ion on hexagonal boron nitride for remediation of real U-contaminated soil and its interpretation using random forest. J. Hazard. Mater. 469, 134072. https://doi.org/10.1016/j.jhazmat.2024.134072.

15. J. Lee, Y. So, S. Kim, Y. Yoon, H. Rho, C. Park*, 2024. Efficient integration of electro-coagulation and ceramic membranes for the treatment of real chemical mechanical polishing (CMP) slurry wastewater from the semiconductor industry. J. Water Process Eng. 61, 105326. https://doi.org/10.1016/j.jwpe.2024.105326.

16. Y. Hyeon, S. Kim, C. Park*, 2024. Exploring the transformation of polyethylene and polyamide microplastics during membrane filtration through FlowCam analysis. Sep. Purif. Technol. 334, 126036. https://doi.org/10.1016/j.seppur.2023.126036.

17. Y. Lee, J. Lee, Y. So, S. Kim, C. Park*, 2024. MXene-based ceramic nanofiltration membranes for selective separation of primary contaminants in semiconductor wastewater. Sep. Purif. Technol. 331, 125653. https://doi.org/10.1016/j.seppur.2023.125653.

18. H. Rho, B.-M. Jun, Y.C. Woo, C. Park, K. Chon, J. Cho, 2023. Evaluation of diffusion coefficients as surrogate indicators for electrostatic repulsion in ultrafiltration membrane fouling. Desalination 568, 117020. https://doi.org/10.1016/j.desal.2023.117020.

19. J. Lee, Y. Lee, S. Kim, Y. So, Y. Yoon, C. Park*, 2023. Comprehensive analysis of the integrated electro-coagulation and membrane filtration process for semiconductor wastewater treatment. J. Water Process Eng. 56, 104468. https://doi.org/10.1016/j.jwpe.2023.104468.

20. S.-N. Nam, Y. Yea, S. Park, C. Park, J. Heo, M. Jang, C.M. Park, Y. Yoon, 2023. Modeling sulfamethoxazole removal by pump-less in-series forward osmosis–ultrafiltration hybrid processes using artificial neural network, adaptive neuro-

fuzzy inference system, and support vector machine. Chem. Eng. J. 474, 145821. https://doi.org/10.1016/j.cej.2023.145821.

21. S. Kim, Y. Hyeon, C. Park*, 2023. Microplastics' shape and morphology analysis in the presence of natural organic matter using flow imaging microscopy. Molecules 28 (19), 6913. https://doi.org/10.3390/molecules28196913.
22. T. Mondal, E.H. Jho, S.K. Hwang, Y. Hyeon, C. Park, 2023. Responses of earthworms exposed to low-density polyethylene microplastic fragments. Chemosphere 333, 138945. https://doi.org/10.1016/j.chemosphere.2023.138945.
23. Y. So, Y. Lee, S. Kim, J. Lee, C. Park*, 2023. Role of co-existing ions in the removal of dissolved silica by ceramic nanofiltration membrane. J. Water Process Eng. 53, 103873. https://doi.org/10.1016/j.jwpe.2023.103873.
24. Y. Hyeon, S. Kim, E. Ok, C. Park*, 2023. A fluid imaging flow cytometry for rapid characterization and realistic evaluation of microplastic fiber transport in ceramic membranes for laundry wastewater treatment. Chem. Eng. J. 454, 140028. https://doi.org/10.1016/j.cej.2022.140028.
25. H. Kook, M. Cha, C. Park*, 2022. Transport of emerging organic ultraviolet (UV) filters in ceramic membranes: Role of polyethylene (PE) microplastics. Chemosphere 309, 136570. https://doi.org/10.1016/j.chemosphere.2022.136570.
26. Y. Lee, M. Cha, Y. So, I.-H. Song, C. Park*, 2022. Functionalized boron nitride ceramic nanofiltration membranes for semiconductor wastewater treatment. Sep. Purif. Technol. 300, 121945. https://doi.org/10.1016/j.seppur.2022.121945.
27. S. Kim, C. Park*, 2022. Fouling behavior and cleaning strategies of ceramic ultrafiltration membranes for the treatment and reuse of laundry wastewater. J. Water Process Eng. 48, 102840. https://doi.org/10.1016/j.jwpe.2022.102840.
28. H. Kook, C. Park*, 2022. Engineered approaches to facile identification of tiny microplastics in polymeric and ceramic membrane filtrations for wastewater treatment. Membranes 12 (6), 565. https://doi.org/10.3390/membranes12060565.
29. D. Naseer, J.-H. Ha, J. Lee, C. Park, I.-H. Song, 2022. Effect of the peptization process and thermal treatment on the sol-gel preparation of mesoporous α-alumina membranes. Membranes 12 (3), 313. https://doi.org/10.3390/membranes12030313.
30. M. Cha, C. Boo, C. Park*, 2022. Simultaneous retention of organic and inorganic contaminants by a ceramic nanofiltration membrane for the treatment of semiconductor wastewater. Process Saf. Environ. Protect. 159, 525-533. https://doi.org/10.1016/j.psep.2022.01.032.
31. M. Cha, C. Boo, I.-H. Song, C. Park*, 2022. Investigating the potential of ammonium retention by graphene oxide ceramic nanofiltration membranes for the treatment of semiconductor wastewater. Chemosphere 286, 131745. https://doi.org/10.1016/j.chemosphere.2021.131745.
32. S. Kim, C. Park*, 2021. Potential of ceramic ultrafiltration membranes for the treatment of anionic surfactants in laundry wastewater for greywater reuse. J. Water Process Eng. 44, 102373. https://doi.org/10.1016/j.jwpe.2021.102373.
33. D. Park, D. Kim, H.J. Lim, C. Park, B. Chua, J.W. Lee, Y. Yoon, A. Son, 2021. Chia seed-assisted separation and detection of polyvinyl chloride microplastics in water via gas chromatography mass spectrometry. Chemosphere 273, 129599. https://doi.org/10.1016/j.chemosphere.2021.129599.
34. M. Cha, S. Kim, C. Park*, 2020. Recent advances and future potential of anaerobic ceramic membrane bioreactors for wastewater treatment: A review. Membr. Water Treat. 11 (1), 31-39. https://doi.org/10.12989/mwt.2020.11.1.031.
35. Y. Jin, H. Lee, C. Park, S. Hong, 2020. Application and adaptation of the ASTM standard modified fouling index (MFI) for seawater desalination reverse osmosis (SWRO) desalination process: Current status, limitations, and future perspectives. Sep. Purif. Rev. 49, 55-67. https://doi.org/10.1080/15422119.2018.1515777.
36. M.M. Damtie, Y.C. Woo, B. Kim, R.H. Hailemariam, K.-D. Park, H.K. Shon, C. Park*, J.-S. Choi, 2019. Removal of fluoride in membrane-based water and wastewater treatment technologies: Performance review. J. Environ. Manage. 251, 109524. https://doi.org/10.1016/j.jenvman.2019.109524.

37. Y. Jin, Y. Choi, K.G. Song, S. Kim, C. Park*, 2019. Iron and manganese removal in direct anoxic nanofiltration for indirect potable reuse. Membr. Water Treat. 10 (4), 299-305. https://doi.org/10.12989/mwt.2019.10.4.299.

38. M. Lee, M. Yang, S. Choi, J. Shin, C. Park, S.-K. Cho, Y.M. Kim, 2019. Sequential production of lignin, fatty acid methyl esters and biogas from spent coffee grounds via an integrated physicochemical and biological process. Energies 12 (12), 2360. https://doi.org/10.3390/en12122360.

39. K. Cho, K.W. Seo, S.G. Shin, S. Lee, C. Park*, 2019. Process stability and comparative rDNA/rRNA community analysis in an anaerobic membrane bioreactor with silicon carbide ceramic membrane applications. Sci. Total Environ. 666, 155-164. https://doi.org/10.1016/j.scitotenv.2019.02.166.

40. S.G. Shin, Y. Ahn, C. Park, Y.-K. Choi, H.-M. Cho, S.-K. Cho, 2019. Size and morphological analyses of ultrasonicated hydrogen-producing granules using a simple method. Int. J. Hydrog. Energy. 44 (4), 2246-2252. https://doi.org/10.1016/j.ijhydene.2018.07.032.

41. Y. Jeong, Y. Kim, Y. Jin, S. Hong, C. Park*, 2018. Comparison of filtration and treatment performance between polymeric and ceramic membranes in anaerobic membrane bioreactor treatment of domestic wastewater. Sep. Purif. Technol. 199, 182-188. https://doi.org/10.1016/j.seppur.2018.01.057.

42. E.E. Kwon, T. Lee, Y.S. Ok, D.C.W. Tsang, C. Park*, J. Lee, 2018. Effects of calcium carbonate on pyrolysis of sewage sludge. Energy 153, 726-731. https://doi.org/10.1016/j.energy.2018.04.100.

43. K. Cho, Y. Jeong, K.Y. Seo, S. Lee, A.L. Smith, S.G. Shin, S.-K. Cho, C. Park*, 2018. Effects of changes in temperature on treatment performance and energy recovery at mainstream anaerobic ceramic membrane bioreactor for food waste recycling wastewater treatment. Bioresour. Technol. 256, 137-144. https://doi.org/10.1016/j.biortech.2018.02.015.

44. J. Lee, J.-M. Jung, C. Park, B.-H. Jeon, C.-H. Wang, S.-R. Lee, E.E. Kwon, 2017. Rapid conversion of fat, oil and grease (FOG) into biodiesel without pre-treatment of FOG. J. Clean Prod. 168, 1211-1216. https://doi.org/10.1016/j.jclepro.2017.09.096.

45. Y. Jeong, K. Cho, E.E. Kwon, Y.F. Tsang, J. Rinklebe, C. Park*, 2017. Evaluating the feasibility of pyrophyllite-based ceramic membranes for treating domestic wastewater in anaerobic ceramic membrane bioreactors. Chem. Eng. J. 328, 567-573. https://doi.org/10.1016/j.cej.2017.07.080.

46. K.W. Seo, Y.-S. Choi, M.B. Gu, E.E. Kwon, Y.F. Tsang, J. Rinklebe, C. Park*, 2017. Pilot-scale investigation of sludge reduction in aerobic digestion system with endospore-forming bacteria. Chemosphere 186, 202-208. https://doi.org/10.1016/j.chemosphere.2017.07.150.

47. Y. Jeong, S.W. Hermanowicz, C. Park*, 2017. Treatment of food waste recycling wastewater using anaerobic ceramic membrane bioreactor for biogas production in mainstream treatment process of domestic wastewater. Water Res. 123, 86-95. https://doi.org/10.1016/j.watres.2017.06.049.

48. Y. Jeong, S. Lee, S. Hong, C. Park*, 2017. Preparation, characterization and application of low-cost pyrophyllite-alumina composite ceramic membranes for treating low-strength domestic wastewater. J. Membr. Sci. 536, 108-115. https://doi.org/10.1016/j.memsci.2017.04.068.

49. B. Jeong, M.-S. Oh, H.-M. Park, C. Park, E.-J. Kim, S.W. Hong, 2017. Elimination of microcystin-LR and residual Mn species using permanganate and powdered activated carbon: Oxidation products and pathways. Water Res. 114, 189-199. https://doi.org/10.1016/j.watres.2017.02.043.

50. J.-A. Park, B. Yang, C. Park, J.-W. Choi, C.M. van Genuchten, S.-H. Lee, 2017. Oxidation of microcystin-LR by the Fenton process: Kinetics, degradation intermediates, water quality and toxicity assessment. Chem. Eng. J. 309, 339-348. https://doi.org/10.1016/j.cej.2016.10.083.

51. C.-G. Lee, S. Lee, J.-A. Park, C. Park, S.J. Lee, S.-B. Kim, B. An, S.-T. Yun, S.-H. Lee, J.-W. Choi, 2017. Removal of copper, nickel and chromium mixtures from metal plating wastewater by adsorption with modified carbon foam. Chemosphere 166, 203-211. https://doi.org/10.1016/j.chemosphere.2016.09.093.

52. J.-H. Ha, S.Z. Abbas Bukhari, J. Lee, I.-H. Song, C. Park, 2016. Preparation processes and characterizations of alumina-coated alumina support layers and alumina-coated natural material-based support layers for microfiltration. Ceram. Int. 42 (12), 13796-13804. https://doi.org/10.1016/j.ceramint.2016.05.181.

53. C.-G. Lee, M.-K. Song, J.-C. Ryu, C. Park, J.-W. Choi, S.-H. Lee, 2016. Application of carbon foam for heavy metal removal from industrial plating wastewater and toxicity evaluation of the adsorbent. Chemosphere 153, 1-9. https://doi.org/10.1016/j.chemosphere.2016.03.034.

54. H. Lee, C. Park, H. Kim, H. Park, S. Hong, 2015. Role of transparent exopolymer particles (TEP) in initial bacterial deposition and biofilm formation on reverse osmosis (RO) membrane. J. Membr. Sci. 494, 25-31. https://doi.org/10.1016/j.memsci.2015.06.049.

55. S. Lee, J.-S. Lee, M.-K. Song, J.-C. Ryu, B. An, C.-G. Lee, C. Park, S.-H. Lee, J.-W. Choi, 2015. Effective regeneration of an adsorbent for the removal of organic contaminants developed based on UV radiation and toxicity evaluation. React. Funct. Polym. 95, 62-70. https://doi.org/10.1016/j.reactfunctpolym.2015.08.008.

56. B. An, C.-G. Lee, M.-K. Song, J.-C. Ryu, S. Lee, S.-J. Park, D. Zhao, S.-B. Kim, C. Park, S.-H. Lee, S.W. Hong, J.-W. Choi, 2015. Applicability and toxicity evaluation of an adsorbent based on jujube for the removal of toxic heavy metals. React. Funct. Polym. 93, 138-147. https://doi.org/10.1016/j.reactfunctpolym.2015.06.009.

57. C.-G. Lee, J.-W. Jeon, M.-J. Hwang, K.-H. Ahn, C. Park, J.-W. Choi, S.-H. Lee, 2015. Lead and copper removal from aqueous solutions using carbon foam derived from phenol resin. Chemosphere 130, 59-65. https://doi.org/10.1016/j.chemosphere.2015.02.055.

58. B. An, H. Kim, C. Park, S.-H. Lee, J.-W. Choi, 2015. Preparation and characterization of an organic/inorganic hybrid sorbent (PLE) to enhance selectivity for As(V). J. Hazard. Mater. 289, 54-62. https://doi.org/10.1016/j.jhazmat.2015.02.029.

59. S. Lee, K.-S. Kwon, J.-C. Ryu, M.-K. Song, S. Pflugmacher, C. Park, S.-H. Lee, C.-H. Park, J.-W. Choi, 2015. Effective treatment of nutrients by adsorption onto the surface of a modified clay and a toxicity evaluation of the adsorbent. Water Air Soil Pollut. 226, 111. https://doi.org/10.1007/s11270-015-2376-8.

60. C. Park, S.W. Hermanowicz, 2014. A multi-point electrical resistance measurement system for characterization of foam drainage regime and stability. AICHE J. 60 (9), 3143-3150. https://doi.org/10.1002/aic.14489.

61. C. Park, S.W. Hermanowicz, D. Jolis, 2013. A novel technique for evaluating foam dynamics in anaerobic digesters. Water Sci. Technol. 67 (11), 2595-2601. https://doi.org/10.2166/wst.2013.160.

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PATENTS

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1. C. Park*, M. Cha, Y. Lee, Y. So, High stability boron nitride ceramic membrane and manufacturing method thereof. KR-10-2623644. January 8, 2024.

2. S. Ahn, C. Park*, M. Cha, S. Kim, Semiconductor process wastewater treatment system and semiconductor process wastewater treatment method using the same. US 11,760,674. September 19, 2023.

3. C. Park*, S. Kim, E. Ok, A system for measuring microplastics based on dynamic image analysis. KR-10-2566703. August 9, 2023.

4. C. Park*, M. Cha, S. Kim, H. Kook, M. Lee, Ceramic GO/PEI nanomembrane by layer-by-layer assembly based on covalent bond using EDC chemistry and method for manufacturing the same. US 17/551,737. December 15, 2021.

and KR-10-2507633. March 3, 2023.

Submitted

1. C. Park*, S. Kim, H. Kim, Pressure based tube wall coating device. KR-10-2025-0086940. June 30, 2025.
2. C. Park*, S. Kim, H. Kim, Coating device for inner wall of hollow tube. KR-10-2025-0086939. June 30, 2025.
3. C. Park*, S. Kim, H. Kim, Y. Jeong, Ceramic hollow fiber membrane coated with nano-graphite and method for preparing same. KR-10-2024-0154933. November 5, 2024.
4. C. Park*, S. Kim, H. Kim, Y. Jeong, Ceramic hollow fiber membrane coated with sodium alginate and method for preparing same. KR-10-2024-0154932. November 5, 2024.
5. C. Park*, S. Kim, H. Kim, Ceramic nanofiltration membrane for water treatment without middle layer and method for manufacturing same. KR-10-2024-0079767. June 19, 2024.
6. C. Park*, S. Kim, Washing machine filter to reduce microplastic emissions in laundry wastewater. KR-10-2024-0048236. April 9, 2024.
7. C. Park*, Y. So, S. Kim, Y. Lee, J. Lee, Bismuth ceramic membrane with high stability and method for preparing thereof. KR-10-2023-0164451. November 23, 2023.
8. C. Park*, S. Kim, Table-type cleaning agent for improving cleaning recovery rate of ceramic membrane and method for preparing same. KR-10-2023-0084763. June 30, 2023.
9. C. Park*, Y. Lee, S. Kim, High stability MXene ceramic membrane and manufacturing method thereof. KR-10-2022-0144697. November 2, 2022.

CONFERENCE PRESENTATIONS

Underline indicates presenter

1. S. Kim, C. Park, “Sodium persulfate-based cleaning agent specialized for ceramic membrane regeneration in wastewater treatment”, The 11th IWA Membrane Technology Conference & Exhibition for Water and Wastewater Treatment and Reuse, September 13-18, 2025, Daegu, South Korea.
2. H. Kim, C. Park, “Effectiveness of MoS2 nanomaterial-integrated ceramic hollow fiber membranes in semiconductor wastewater treatment”, The 11th IWA Membrane Technology Conference & Exhibition for Water and Wastewater Treatment and Reuse, September 13-18, 2025, Daegu, South Korea.
3. H. Kim, C. Park, “Assessment of ceramic hollow fiber membranes functionalized with MoS_2 nanomaterials for semiconductor wastewater purification”, The 15th Conference of Aseanian Membrane Society, August 19-21, 2025, Kuala Lumpur, Malaysia.
4. S. Kim, H. Kim, C. Park, “A novel cleaning agent specialized for organic induced fouling of ceramic membranes”, The 14th World Filtration Congress, June 30-July 4, 2025, Bordeaux, France.
5. S. Kim, C. Park, “Advanced inorganic membranes for harsh wastewater treatment and beyond”, 2025 AEESP Research and Education Conference, May 19-22, Durham, North Carolina.
6. Y. So, S.Y. Kim, C. Park, “Innovative approaches to high-speed ceramic membrane filtration for microplastic mitigation in urban wastewater treatment facilities”, The 17th Annual International Conference on the Challenges in Environmental Science & Engineering (CESE-2024), October 13-17, 2024, Pula, Croatia.
7. H. Kim, S. Kim, C. Park, “Development of ceramic hollow fiber nanofiltration membranes incorporated with functionalized MoS_2 nanomaterials”, The 17th Annual International Conference on the Challenges in Environmental Science & Engineering (CESE-2024), October 13-17, 2024, Pula, Croatia.
8. S. Kim, C. Park, “Innovative persulfate-based solutions for chemical cleaning of organically-fouled ceramic membrane”, EuroMembrane, September 8-12, 2024, Prague, Czech Republic.
9. S. Kim, C. Park, “Application of ceramic and polymeric membranes as microplastic filters for household laundry

washing machines", EuroMembrane, September 8-12, 2024, Prague, Czech Republic.

10. H. Kim, C. Park, "MoS2 nanosheet coatings on ceramic hollow fiber membranes for high selective nitride (HSN) treatment in semiconductor wastewater", EuroMembrane, September 8-12, 2024, Prague, Czech Republic.
11. Y. Lee, J. Lee, Y. So, S. Kim, C. Park, "Repeated stacking of Ti_3C_2 nanosheets on ceramic membranes for improving organic solvent retention in semiconductor wastewater ", The 14th International Conference on Ceramic Materials and Components for Energy and Environmental Systems, August 18-22, 2024, Budapest, Hungary.
12. Y. Lee, S. Kim, C. Park, "MXene nanomaterial coated ceramic nanofiltration membranes for semiconductor wastewater treatment", The 9th EuChemS Chemistry Congress, July 7-11, 2024, Dublin, Ireland.
13. S. Kim, C. Park, "Enhanced treatment of dissolved contaminants in semiconductor wastewater using ceramic nanofiltration membranes incorporating boron nitride materials", The 9th EuChemS Chemistry Congress, July 7-11, 2024, Dublin, Ireland.
14. S. Kim, Y. Hyeon, C. Park, "Status and development of living environment microplastic reduction filters", The 13th IWA Micropol and Ecohazard Conference, June 16-20, 2024, Taipei, Taiwan.
15. S. Kim, C. Park, "Comparison of polymeric and ceramic microplastic filters for laundry wastewater treatment", AWWA's 2024 Annual Conference & Expo (ACE24), June 10-13, 2024, Anaheim, California.
16. Y. Lee, J. Lee, Y. So, S. Kim, C. Park, "Ceramic nanofiltration membranes for the removal of toxic organic solvent contaminants in semiconductor wastewater", The 8th Green & Sustainable Chemistry Conference, May 12-15, 2024, Dresden, Germany.
17. H. Rho, C. Park, K. Chon, "A green analytical approach to measure carbonate alkalinity in aqueous solutions using a total organic carbon analyzer", The 8th Green & Sustainable Chemistry Conference, May 12-15, 2024, Dresden, Germany.
18. Y. Hyeon, S. Kim, C. Park, "Microplastic transformation and retention mechanism in ceramic membranes for wastewater treatment", The 48th International Conference and Exposition on Advanced Ceramics and Composites, Jan 28–Feb 2, 2024, Daytona Beach, FL.
19. Y. Lee, Y. So, S. Kim, C. Park, "Ceramic membranes with 2D-nanostructured materials for the treatment of semiconductor wastewater", The 7th MEMTEK International Symposium on Membrane Technologies and Applications, October 17-19, 2023, Istanbul, Türkiye.
20. Y. Lee, Y. So, S. Kim, C. Park, "Ceramic nanofiltration membranes with two-dimensional nanostructured materials for the treatment of semiconductor wastewater", American Chemical Society (ACS) Fall Meeting, August 13-17, 2023, San Francisco, California.
21. Y. Hyeon, S. Kim, C. Park, "Transport of microplastic fibers through dynamic imaging analysis in ceramic membrane filtrations", The 10th IWA Membrane Technology Conference & Exhibition for Water and Wastewater Reuse, July 23-26, 2023, St. Louis, Missouri.
22. D. Naseer, J.-H. Ha, J. Lee, H.-J. Lee, C. Park, I.-H. Song, "Effect of the peptization process and thermal treatment on the sol-gel preparation of mesoporous-alumina membranes", The 13th International Congress on Membranes and Membrane Processes (ICOM), July 9-14, 2023, Chiba, Japan.
23. S. Kim, Y. Hyeon, C. Park, "Dynamic fibrous microplastic imaging analysis in ceramic membrane filtrations for treating laundry wastewater", The 13th International Congress on Membranes and Membrane Processes (ICOM), July 9-14, 2023, Chiba, Japan.
24. Y. Lee, Y. So, I.-H. Song, C. Park, "2D-nanomaterial coated ceramic membranes for semiconductor wastewater treatment", The 13th International Congress on Membranes and Membrane Processes (ICOM), July 9-14, 2023, Chiba, Japan.
25. Y. Hyeon, S. Kim, E. Ok, C. Park, "Retention patterns of microplastic fibers in ceramic membranes for laundry wastewater treatment", AMTA/AWWA Membrane Technology Conference & Exposition, February 20-23, 2023, Knoxville, Tennessee.
26. Y. Lee, M. Cha, Y. So, I.-H. Song, C. Park, "Development and application of functionalized boron nitride ceramic

nanofiltration membrane for semiconductor wastewater treatment", EuroMembrane, November 20-24, 2022, Sorrento, Italy.

27. S. Kim, C. Park, "Fouling behavior and cleaning strategies of ceramic ultrafiltration membranes for the treatment and reuse of laundry wastewater", EuroMembrane, November 20-24, 2022, Sorrento, Italy.
28. K. Cho, K.W. Seo, S.G. Shin, S. Lee, C. Park, "Effect of organic loading rates on microbial communities of a silicon carbide anaerobic ceramic membrane bioreactor (SiC-AnCMBR) treating food waste recycling wastewater", The 10th International Membrane Science & Technology Conference (IMSTEC), February 2-6, 2020, Sydney, Australia.
29. S. Kim, M. Cha, C. Park, "Anaerobic membrane bioreactor for direct COD capture and biogas production in mainstream wastewater treatment", The 16th IWA World Conference on Anaerobic Digestion, June 23-27, 2019, Delft, Netherlands.
30. K. Cho, K.W. Seo, S.G. Shin, S. Lee, M.B. Gu, C. Park, "Silicon carbide (SiC) anaerobic ceramic membrane bioreactor to treat high-strength organic wastewater", The 16th IWA World Conference on Anaerobic Digestion, June 23-27, 2019, Delft, Netherlands.
31. Y. Choi, Y. Jin, S. Kim, C. Park, "Iron (II) and manganese (II) removal in direct nanofiltration implementation for treating anoxic groundwater in managed aquifer recharge", AMTA/AWWA Membrane Technology Conference & Exposition, February 25-28, 2019, New Orleans, Louisiana.
32. Y. Choi, Y. Jin, S. Hong, C. Park, "Scaling and fouling in NF membrane for treating anoxic groundwater in managed aquifer recharge (MAR) extraction wells", IWA World Water Congress & Exhibition, September 16-21, 2018, Tokyo, Japan.

FUNDED RESEARCH PROJECTS

1 USD = KRW 1,400

1.	03/01/2025 – 02/29/2028	*National Research Foundation of Korea* (KRW 705,786,000 / USD 504,133) Development of micro/nano-plastic filters for laundry wastewater and upcycling technologies of collected materials
2.	07/01/2024 – 12/31/2028	*National Research Foundation of Korea* (KRW 4,550,000,000 / USD 3,250,000) Development of environmental nanomaterial-based ceramic membranes for public safety and resource recovery from emerging industrial wastewater
3.	04/18/2024 – 12/17/2024	*Seoul Green Environmental Center* (KRW 27,000,000 / USD 19,285) Development of rapid measurement and treatment technologies for microplastics in urban environmental infrastructure
4.	05/01/2023 – 12/31/2023	*Korea Technology and Information Promotion Agency for SMEs* (KRW 25,000,000 / USD 17,857) Development of ceramic-PES composite material-based washing wastewater microplastic reduction filter
5.	04/01/2023 – 03/31/2025	*National Research Foundation of Korea and Commercialization Promotion Agency* (KRW 920,000,000 / USD 657,142) Technology advancement and practical application of ceramic nanofiltration membranes for the treatment of semiconductor wastewater
6.	03/01/2021 – 02/28/2025	*National Research Foundation of Korea* (KRW 560,763,000 / USD 400,545) A study on the characteristics of micro/nano-plastics by a 3-dimension dynamic particle image analysis with the development of optimization technologies for reducing their discharge from laundry wastewater
7.	08/24/2020 – 12/31/2024	*National Research Foundation of Korea* (KRW 399,094,000 / USD 285,067) (Sub-contracted Under Korea Institute of Materials Science (KIMS)) Development and application of nano-sized ceramic filters for improving treatment performance of highly hazardous wastewater

8.	02/01/2020 – 01/31/2022	*SK Hynix, Inc.* (KRW 110,000,000 / USD 78,571) Development of ceramic nanofiltration membrane processes for the removal of ammonia nitrogen in semiconductor wastewater
9.	06/20/2019 – 11/30/2019	*Seoul Waterworks Authority* (KRW 15,675,000 / USD 11,196) A feasibility study on the guideline for the healthy and tasty drinking water
10.	09/01/2018 – 08/31/2021	*National Research Foundation of Korea* (KRW 300,000,000 / USD 214,285) A microplastic removal mechanism and a water-energy nexus study in urban wastewater treatment system using the development of anaerobic granular sludge membrane bioreactors with low-energy requirements
11.	10/01/2017 – 12/31/2020	*Ministry of Trade, Industry and Energy* (KRW 800,000,000 / USD 571,428) (Sub-contracted Under Hoimyung Solenis Co., Ltd.) Development of low energy desalination water treatment engineering package system for industrial recycle water production
12.	07/01/2017 – 06/30/2019	*Samyoung Global Company* (KRW 400,000,000 / USD 285,714) Development of commercialized advanced wastewater treatment processes integrated fixed media and granules with nitrifying bacteria