

Curriculum Vitae



Prof. Dr. Beom Seok Kim

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Work History

- 04.2025 ~ present Associate Professor,
Seoul National University of Science and Technology
- 03.2021 ~ 04.2025 Assistant Professor,
Seoul National University of Science and Technology
- 07.2017 ~ 02.2021 Senior Researcher,
Korea Institute of Fusion Energy (KFE)
- 08.2015 ~ 06.2017 Humboldt Research Fellow,
Leibniz Institute for Solid State and Materials Research Dresden (IFW Dresden)
- 01.2015 ~ 07.2015 Research Associate,
Leibniz Institute for Solid State and Materials Research Dresden (IFW Dresden)
- 12.2012 ~ 12.2014 Research Professor,
Yonsei University
- 09.2011 ~ 11.2012 Post-doctoral researcher,
Yonsei University

Education

- 09.2004 ~ 08.2011 Ph. D. in Mechanical Engineering, Yonsei University
(Dissertation title: Boiling heat transfer enhancement by micro-nanoscale surface manipulation, Advisor: Professor Hyung Hee Cho)
- 03.2001 ~ 08.2004 B.S. in Mechanical Engineering, Yonsei University
(*The early graduation of an excellent student with magna cum laude*)

Contributions to the Profession

Professional Society Roles

- 2026.01 ~ present Business directors,
The Korean Society of Mechanical Engineers (KSME)
- 2026.01 ~ present Academic directors,
KSME, Thermal Engineering Division
- 2025.01 ~ present Editor,
JMST Advances
- 2025.01 ~ 2025.12 Executive director for Industry-Academic Cooperation,
KSME, Thermal Engineering Division
- 2023.03 ~ present Scientific Council,
International Centre for Heat and Mass Transfer
- 2021.04 ~ present Editing executive director,
KSME, Energy and Power Engineering Division
- 2020.01 ~ 2021.02 National Technical Coordinator (Korea Institute of Fusion Energy (KFE))
IAEA technical meeting on safety for fusion reactors
- 2015 ~ present Editorial board,
Frontiers in Mechanical Engineering
- 2016 ~ 2017 Committee Member,
KEIT Global Planning Forum (EKC 2016)
- 2016 ~ 2017.06 Head, Mechanical Engineering division,
The Association of Korean Scientist and Engineers in Germany
(Verein Koreanischer Naturwissenschaftlicher und Ingenieure in der BRD, VeKNI)

Invited Talks & Seminars

- [1] **B. S. Kim** "Fusion engineering technologies for future energy transition," Innovation Challenge Technology Trend Seminar, hosted by Korea Institute of Science & Technology Evaluation and Planning (KISTEP), Seoul, Korea, March 18, 2025. (Invited Talk)
- [2] **B. S. Kim** "Safety importance assessment of fusion facilities: Case studies and implication," 4th Forum on Innovative Fusion Reactor Development, Seoul, Korea, February 10, 2025. (Invited Talk)
- [3] **B. S. Kim**, H. K. Moon, H. H. Cho "Thermal load analysis and design approaches for in-vessel components in fusion tokamak," 2024 the Korean Society of Mechanical Engineering (KSME) Annual Fall Conference, Jeju, Korea, November 6, 2024. (Invited Talk)
- [4] **B. S. Kim** "Advanced sensors w/ functionality for heat transfer applications," KIER Knowledge Sharing Workshop, Daejeon, Korea, August 9, 2024. (Invited Talk)
- [5] **B. S. Kim** "Thermal analysis process based on computational fluid dynamics (CFD)," VC-Tech Industry-Academy Cooperation Seminar, Gunpo, Korea, June 26, 2024. (Invited Seminar)
- [6] **B. S. Kim** "Thermal design of high-heat-flux and extreme environment components based on conjugated heat transfer technology," BK21 TIPS Academic Research Exchange Seminar at Jeonbuk National University,

Jeonju, Korea, January 29, 2024. (Invited Seminar)

- [7] **B. S. Kim** "Introduction to fusion engineering," International Cooperation Seminar at Seoul National University of Science and Technology, Seoul, Korea, July 28, 2023. (Invited Seminar)
- [8] **B. S. Kim** "Cooling design for power conversion devices based on convection and conduction heat transfer," Academy Cooperation Seminar at Korea Electrotechnology Research Institute (KERI), Naju, Korea, February 28, 2023. (Invited Seminar)
- [9] **B. S. Kim** "Fusion power technology: The role of mechanical engineers," Brain Korea Seminar at Yonsei University, Seoul, Korea, January 19, 2023. (Invited Talk)
- [10] **B. S. Kim** "Proposals for fusion design safety and regulation IAEA framework development from Korea," Consultancy Meeting on Proposals for Fusion Design Safety and Regulation IAEA Framework Development, Vienna (online), Austria, October 12, 2021. (Invited Talk)
- [11] **B. S. Kim** "Role of mechanical engineering for a possible fusion power plant – from the assessment of energy sources to the preparedness of regulations," 2021 the Korean Society of Mechanical Engineering (KSME) Annual Spring Conference, Seoul (online), Korea, May 23, 2021. (Invited Talk)
- [12] **B. S. Kim**, S.-H. Hong "Regulatory environment in Korea: Ways from KSTAR to demonstration reactor," 1st Joint IAEA-ITER Technical Meeting on Safety and Radiation Protection for Fusion Reactors, Vienna (online), Austria, November 17, 2020. (Invited Talk)

List of Publications

International Journals (Published)

- [1] J. G. Kang, H. Kee, H. W. Kim, H. Kim, K. J. Kim, T. J. Ahn, **B. S. Kim** (2026) "Eddy current heating and thermo-mechanical response of the in-vessel control coil in the Korea Superconducting Tokamak Advanced Research," *Applied Thermal Engineering* 286, 129304.
- [2] T. J. Ahn, K. J. Kim, H. Kim, J. G. Kang, D. J. Wei, D. H. Lee, C. Jung, S. K. Hong, **B. S. Kim** (2025) "Accelerating phase change in latent heat thermal storage with flat-tube geometry," *Applied Thermal Engineering* 280, 128308.
- [3] **B. S. Kim**, S. Shin, H. H. Cho (2025) "Fin effect enables self-controlled growth of nanowires," *RSC Advances* 15, 42507. (First & Co-corresponding author)
- [4] K. J. Kim, S. K. Hong, H. Kim, J. G. Kang, **B. S. Kim** (2025) "Enhancing efficiency: the role of reactor geometry in thermochemical heat storage with zeolite 13X," *Applied Thermal Engineering* 279, 127689.
- [5] M. Yun, G. Choi, W.-T. Hsu, D. I. Shim, Y.-H. Kim, **B. S. Kim**, D. Lee, H. H. Cho (2025) "Effect of surfactant on boiling heat transfer of structured surfaces," *International Journal of Heat and Mass Transfer* 251, 127391.
- [6] D. Lee, H.-T. Hong, Y. M. Park, K. H. Hong, N. I. Her, J. Choi, J. Kim, **B. S. Kim**, J. W. Moon, S. M. Ryew (2025) "Design progress of an articulated robotic arm for low-payload maintenance tasks in KSTAR," *Fusion Engineering and Design* 220, 115343.

- [7] **B. S. Kim***, S. Lee*, J. Lee, J. R. Choi, S. Shin, H. H. Cho (2025) "Hydrodynamic characterization of cathodic flooding in proton exchange membrane fuel cell using a modified Euler number," *Journal of Power Sources* 649, 237336. (Co-first author)
- [8] J. G. Kang, H. Kim, S. Shin, **B. S. Kim** (2024) "Fluid flow to electricity: Capturing flow-induced vibrations with MEMS-based piezoelectric energy harvester," *Micromachines* 15, 518.
- [9] G. Choi, **B. S. Kim***, M. Yun, N. Lee, S. Shin, H. H. Cho (2024) "Surface roughening and hemi-wicking: Synergistic impact on flow boiling," *International Journal of Mechanical Sciences* 268, 109021. (Co-first author)
- [10] H. Kim, S. K. Hong, J. G. Kang, S. Moon, G. Kim, S. Yoon, D. Wei, H. Moon, **B. S. Kim** (2024) "Exploration adsorption characteristics of zeolite 13X depending on humidity and flow rate in sorption thermal energy storage applications," *International Journal of Heat and Mass Transfer* 221, 125049.
- [11] W. T. Hsu, D. I. Shim, M. Yun, D. Lee, **B. S. Kim**, H. H. Cho (2023) "Free-standing nanowire printed surfaces with high variability in substrate selection for boiling heat transfer enhancement," *International Journal of Heat and Mass Transfer* 212, 124313.
- [12] D. I. Shim, W. Hsu, M. Yun, D. Lee, **B. S. Kim**, H. H. Cho (2023) "Superbiphilic patterned nanowires with wicking for enhanced pool boiling heat transfer," *International Journal of Mechanical Sciences* 249, 108280.
- [13] **B. S. Kim**, S. Hong, K. Kim (2022) "Preliminary assessment of the safety factors in K-DEMO for fusion compatible regulatory framework," *Scientific Reports* 12, 8276.
- [14] H. Moon, S.-H. Park, H.-S. Kim, **B. S. Kim** (2022) "Evaluation of the functional acceptability of the ITER vacuum vessel," *Nuclear Fusion* 63, 016003.
- [15] G. Choi, M. Yun, W.-T. Hsu, D. I. Shim, D. Lee, **B. S. Kim**, H. H. Cho (2022) "Enhanced boiling heat transfer by nucleation patterning with self-assembly of reduced graphene oxide coating," *International Journal of Heat and Mass Transfer* 197, 123329.
- [16] S. Cho, M.-Y. Ahn, Y.-B. Chun, H. Gwon, H. G. Jin, **B. S. Kim**, C.-S. Kim, J.-I. Kim, S.-K. Kim, D. Y. Ku, C. W. Lee, E. H. Lee, H.-Y. Lee, Y. Lee, S. D. Park, Y.-H. Park, C. W. Shin, S.-K. Son, J. S. Yoon, S. Yun (2021) "Status of HCCR TBM program for DEMO blanket," *Fusion Engineering and Design* 171, 112553.
- [17] **B. S. Kim**, N. Lee, S. Thota, T. Gemming, H. H. Cho (2019) "Effects of radiative local heating on metal solidification during selective laser melting for additive manufacturing," *Applied Surface Science* 496, 143594.
- [18] **B. S. Kim**, B. C. Kim, K. Im, H.-T. Kim, S. Kwon, J. Park (2019) "Assessment of the activation induced by neutron irradiation in K-DEMO and thermal response under the decay heat," *Fusion Engineering and Design* 146 Part B, 2323-2327.
- [19] G. Choi, D. I. Shim, D. Lee, **B. S. Kim**, H. H. Cho (2019) "Enhanced nucleate boiling using a reduced graphene oxide-coated micropillar," *International Communications in Heat and Mass Transfer* 109, 104331.
- [20] N. Lee, **B. S. Kim**, H. Moon, J. Lim, H. H. Cho (2019) "Heat-absorbing capacity of high-heat-flux components in nuclear fusion reactors," *Energies* 12, 3771.
- [21] D. Lee*, **B. S. Kim***, H. Moon, N. Lee, S. Shin, H. H. Cho (2018) "Enhanced boiling heat transfer on nanowire-forested surfaces under subcooling conditions," *International Journal of Heat and Mass Transfer* 120,

1020-1030. (Co-first author)

- [22] S. Shin, G. Choi, B. Rallabandi, D. Lee, D. I. Shim, K. M. Kim, **B. S. Kim**, H. H. Cho (2018) "Enhanced boiling heat transfer using self-actuated nanobimorphs," *Nano Letters* 18, 6392-6396.
- [23] D. Lee, N. Lee, D. I. Shim, **B. S. Kim**, H. H. Cho (2018) "Enhancing thermal stability and uniformity in boiling heat transfer using micro-nano hybrid surfaces (MNHS)," *Applied Thermal Engineering* 130, 710-721.
- [24] **B. S. Kim**, B. I. Lee, N. Lee, G. Choi, T. Gemming, H. H. Cho (2017) "Nano-inspired smart interfaces: fluidic interactivity and its impact on heat transfer," *Scientific Reports* 7, 45323.
- [25] D. I. Shim, G. Choi, N. Lee, T. Kim, **B. S. Kim**, H. H. Cho (2017) "Enhancement of pool boiling heat transfer using aligned silicon nanowire arrays," *ACS Applied Materials & Interfaces* 9, 17595-17602. (Cited by 100)
- [26] N. Lee, **B. S. Kim**, T. Kim, J. Bae, H. H. Cho (2017) "Thermal design of helium cooled divertor for reliable operation," *Applied Thermal Engineering* 110, 1578-1588.
- [27] **B. S. Kim**, G. Choi, S. Shin, T. Gemming, H. H. Cho (2016) "Nano-inspired fluidic interactivity for boiling heat transfer: impact and criteria," *Scientific Reports* 6, 34348.
- [28] **B. S. Kim**, G. Choi, D. I. Shim, K. M. Kim, H. H. Cho (2016) "Surface roughening for hemi-wicking and its impact on convective boiling heat transfer," *International Journal of Heat and Mass Transfer* 102, 1100-1107. (Cited by 53)
- [29] **B. S. Kim**, S. H. Tamboli, J. B. Han, T. Kim, H. H. Cho (2015) "Broadband radiative energy absorption using a silicon nanowire forest with silver nanoclusters for thermal energy conversion," *International Journal of Heat and Mass Transfer* 82, 267-272.
- [30] **B. S. Kim**, G. M. Yang, S. Shin, G. Choi, H. H. Cho (2015) "Local nucleation propagation on heat transfer uniformity during subcooled convective boiling," *Heat and Mass Transfer* 51, 1-9.
- [31] H. Moon, K. M. Kim, J. S. Park, **B. S. Kim**, H. H. Cho (2015) "Thermo-mechanical analysis of an internal cooling system," *Heat and Mass Transfer* 51, 1779-1790.
- [32] **B. S. Kim**, H. Lee, S. Shin, D. Lee, G. Choi, H. H. Cho (2014) "Interfacial wicking dynamics and its impact on critical heat flux of boiling heat transfer," *Applied Physics Letters* 105, 191601. (Cited by 164)
- [33] **B. S. Kim**, S. Shin, D. Lee, G. Choi, H. Lee, K. M. Kim, H. H. Cho (2014) "Stable and uniform heat dissipation by nucleate-catalytic nanowires for boiling heat transfer," *International Journal of Heat and Mass Transfer* 70, 23-32. (Cited by 100)
- [34] S. Shin, G. Choi, **B. S. Kim**, H. H. Cho (2014) "Flow boiling heat transfer on nanowire-coated surfaces with highly wetting liquid," *Energy* 76, 428-435. (Cited by 67)
- [35] G. Choi, **B. S. Kim**, H. Lee, S. Shin, H. H. Cho (2014) "Jet impingement in a crossflow configuration: Convective boiling and local heat transfer characteristics," *International Journal of Heat and Fluid Flow* 50, 378-385.
- [36] S. Shin, T. T. Al-Housseiny, **B. S. Kim**, H. H. Cho, H. A. Stone (2014) "The race of nanowires: morphological instabilities and a control strategy," *Nano Letters* 14, 4395-4399.
- [37] S. H. Tamboli, **B. S. Kim**, G. Choi, H. Lee, D. Lee, U. M. Patil, J. Lim, S. B. Kulkarni, S. C. Jun, H. H. Cho (2014) "Post-heating effects on the physical and electrochemical capacitive properties of reduced graphene oxide paper," *Journal of Materials Chemistry A* 2, 5077-5086.
- [38] H. Chung, K. M. Kim, H. G. Kwon, S. Lee, **B. S. Kim**, H. H. Cho (2014) "Heat transfer and fluid flow on

dimpled surface with bleed flow," *Heat Transfer Engineering* 35, 641-650.

- [39] J. Song, J. W. Lee, M. S. Yu, S. Shin, **B. S. Kim**, H. H. Cho (2013) "Thermal characteristics of inclined plate impinged by underexpanded sonic jet," *International Journal of Heat and Mass Transfer* 62, 223-229.
- [40] S. Shin, **B. S. Kim**, G. Choi, H. Lee, H. H. Cho (2012) "Double-templated electrodeposition: Simple fabrication of micro-nano hybrid structure by electrodeposition for efficient boiling heat transfer," *Applied Physics Letters* 101, 251905.
- [41] S. Shin, **B. S. Kim**, J. Song, H. Lee, H. H. Cho (2012) "A facile route for the fabrication of large-scale gate-all-around nanofluidic field-effect transistors with low leakage current," *Lab on a Chip* 12, 2568-2574.
- [42] S. Shin, **B. S. Kim**, K. M. Kim, H. H. Cho (2012) "Multi-variable thermal design of T-structured phase-change memory cell using advanced response surface method," *Microelectronic Engineering* 91, 1-8.
- [43] **B. S. Kim**, S. Shin, S. J. Shin, K. M. Kim, H. H. Cho (2011) "Control of superhydrophilicity/superhydrophobicity using silicon nanowires via electroless etching method and fluorine carbon coatings," *Langmuir* 27, 10148-10156. (Cited by 101)
- [44] **B. S. Kim**, S. Shin, S. J. Shin, K. M. Kim, H. H. Cho (2011) "Micro-nano hybrid structures with manipulated wettability using a two-step silicon etching on a large area," *Nanoscale Research Letters* 6, 333. (Cited by 75)
- [45] **B. S. Kim**, B. S. Kwak, S. Shin, S. Lee, K. M. Kim, H. Jung, H. H. Cho (2011) "Optimization of microscale vortex generators in a microchannel using advanced response surface method," *International Journal of Heat and Mass Transfer* 54, 118-125. (Cited by 57)
- [46] S. Shin, **B. S. Kim**, K. M. Kim, B. H. Kong, H. K. Cho, H. H. Cho (2011) "Tuning the morphology of copper nanowires by controlling the growth processes in electrodeposition," *Journal of Materials Chemistry* 21, 17967-17971.
- [47] J. S. Noh, H. Kim, **B. S. Kim**, E. Lee, H. H. Cho, W. Lee (2011) "High-performance vertical hydrogen sensors using Pd-coated rough Si nanowires," *Journal of Materials Chemistry* 21, 15935-15939 (Front cover paper, Cited by 72).
- [48] S. Shin, B. H. Kong, **B. S. Kim**, K. M. Kim, H. K. Cho, H. H. Cho (2011) "Over 95% of large-scale length uniformity in template-assisted electrodeposited nanowires by subzero-temperature electrodeposition," *Nanoscale Research Letters* 6, 467.
- [49] B. S. Kwak, **B. S. Kim**, S. H. Song, H. O. Kim, H. H. Cho, H. I. Jung (2010) "Direct measurement of the in vitro hemoglobin content of erythrocytes using the photo-thermal effect of the heme group," *Analyst* 135, 2365-2371.
- [50] K. M. Kim, **B. S. Kim**, D. H. Lee, H. Moon, H. H. Cho (2010) "Optimal design of transverse ribs in tubes for thermal performance enhancement," *Energy* 35, 2400-2406.
- [51] K. M. Kim, H. Lee, **B. S. Kim**, S. Shin, D. H. Lee, H. H. Cho (2009) "Optimal design of angled rib turbulators in a cooling channel," *Heat and Mass Transfer* 45, 1617-1625.
- [52] S. Shin, H. N. Cho, **B. S. Kim**, H. H. Cho (2008) "Influence of upper layer on measuring thermal conductivity of multilayer thin films using differential 3-omega method," *Thin Solid Films* 517, 933-936.
- [53] B. S. Kwak, **B. S. Kim**, H. H. Cho, J. S. Park, H. I. Jung (2008) "Dual thermopile integrated microfluidic calorimeter for biochemical thermodynamics," *Microfluidics and Nanofluidics* 5, 255-262.

Books & Book Chapters

- [1] H. H. Cho, **B. S. Kim**, *et al.* (2017) "Cengel의 열전달 (6판) / Heat and Mass Transfer: Fundamentals and Applications (6th edition)," McGraw Hill (ISBN: 979-11-321-0851-1).
- [2] H. H. Cho, **B. S. Kim** (2017) "Heat and Mass Transfer in Silicon-Based Nanostructures" in *Silicon Nanomaterials Sourcebook*, Taylor & Francis (CRC Press) (ISBN: 978-1-49876-378-3 – CAT# K28987).
- [3] H. H. Cho, **B. S. Kim** (2014) "Impingement/effusion cooling methods in gas turbines" in *Impingement Jet Cooling in Gas Turbines*, Wessex Institute of Technology Press (ISBN: 978-1-84564-906-7).

Technical Reports

- [1] S.-H. Hong, **B. S. Kim**, *et al.* (2021) "Conceptual study report of Korean Fusion Demonstration Tokamak Reactor-Vol I: Physics & Operation," Korea Institute of Fusion Energy.
- [2] S.-H. Hong, **B. S. Kim**, *et al.* (2021) "Conceptual study report of Korean Fusion Demonstration Tokamak Reactor-Vol II: K-DEMO Tokamak & Plant System," Korea Institute of Fusion Energy.
- [3] S.-H. Hong, **B. S. Kim**, *et al.* (2021) "Conceptual study report of Korean Fusion Demonstration Tokamak Reactor-Vol III: Safety, Regulation & Environment," Korea Institute of Fusion Energy.
- [4] G. H. Hong, **B. S. Kim**, S.-H. Hong (2020) "Analysis on the maintenance technology using remote handling in JET," TN_050_2020-Remote Maintenance-001-v01, Korea Institute of Fusion Energy.
- [5] **B. S. Kim**, S.-H. Hong (2020) "Korean regulation on the classification and clearance of radioactive waste," TN_049_2020-Safety-008-v01, Korea Institute of Fusion Energy.
- [6] **B. S. Kim**, S.-H. Hong (2020) "Foreseeable barriers during a licensing of a Korean demonstration reactor," TN_048_2020-Safety-007-v01, Korea Institute of Fusion Energy.
- [7] **B. S. Kim**, S.-H. Hong (2020) "Design parameters of a fusion demonstration reactor," TN_047_2020-Safety-006-v01, Korea Institute of Fusion Energy.
- [8] **B. S. Kim**, K. H. Hong, S. H. Park, S.-H. Hong (2019) "Analysis of ITER engineering codes and standards (C&S) and their allocation for principal components and system," TN_046_2019-Safety-005-v01, Korea Institute of Fusion Energy.
- [9] **B. S. Kim**, K. H. Hong, S. H. Park, S.-H. Hong (2019) "Reviews on ITER project requirement (PR) and project breakdown structures," TN_045_2019-Safety-004-v01, Korea Institute of Fusion Energy.
- [10] **B. S. Kim**, K. H. Hong, S. H. Park, S.-H. Hong (2019) "Safety studies on nuclear fusion reactors and reviews on fission/fusion regulatory environment," TN_044_2019-Safety-003-v01, Korea Institute of Fusion Energy.
- [11] **B. S. Kim**, B. C. Kim (2018) "Benchmarking BA DEMO safety research for K-DEMO safety studies," TN_043_2018-Safety-002-v01, Korea Institute of Fusion Energy.
- [12] K. Im, H. W. Kim, S. J. Kwon, **B. S. Kim** (2018) "K-DEMO safety preliminary requirements, radiation source terms and internal energy sources," TN_042_2018-Safety-001-v01, Korea Institute of Fusion Energy.
- [13] **B. S. Kim**, K. Im (2017) "Development of DEMO hot cell facility design concept and analysis on its design parameters," TN_041_2017-Hot-cell-001-v01, Korea Institute of Fusion Energy.
- [14] **B. S. Kim**, K. Im, H. T. Kim (2017) "Characterization of radioactivation of K-DEMO breeding blankets due to high energy neutrons and assessment of rad-waste," TN_040_2017-In-vessel-006-v01, Korea Institute of Fusion Energy.

Domestic Journals

- [1] H. Kim, S. H. Park, H. Seol, J. Ryu, J. Park, **B. S. Kim** (2024) "Parametric study on the design of 50 kW-transformer for electric vehicles considering electromagnetic-thermal characteristics," *Transactions of Korean Society of Mechanical Engineering B* 48, 167.
- [2] **B. S. Kim**, K. Im, H. Kim, S. Kwon, J. S. Park (2019) "Analysis on the radio-activation and decay heat induced by fusion neutrons in K-DEMO breeding blanket," *Transactions of Korean Society of Mechanical Engineering C* 7, 1.
- [3] **B. S. Kim**, S. Shin, M. S. Yu, H. H. Cho, J. W. Lee, J. C. Bae (2007) "Measurement of adiabatic wall temperature in compressible high speed impinging jets using infra-red camera," *Journal of the Korean Society for Aeronautical and Space Sciences* 35, 714.

Patents

Registered Patent

- [1] H. H. Cho, K. M. Kim, H. K. Moon, **B. S. Kim**, J. S. Park, S. H. Kim (2019) "Supercritical fluid cooling gas turbine apparatus," EU Patent (Patent No. EP3081782B1).
- [2] H. H. Cho, H. K. Moon, G. Choi, **B. S. Kim**, D. Lee, H. Lee, H. Yoo, D. Shim (2018) "Supporting material characterized by the nanowire type is engraved on the surface of the spherical silica for carbon dioxide dry adsorbent and the preparation thereof," Korean Patent (Patent No. 10-1823069).
- [3] H. H. Cho, K. M. Kim, H. Moon, **B. S. Kim**, J. S. Park, S. H. Kim (2017) "Supercritical fluid cooling gas turbine apparatus," Japan Patent (Patent No. 6239123).
- [4] H. H. Cho, H. Moon, G. Choi, **B. S. Kim**, D. Lee, H. Lee, H. Yoo, D. Shim (2017) "Carrier for dry adsorbent for carbon dioxide including spherical silica whose surface is engraved in the form of nanowires and method for preparing the same," US Patent (Patent No. US9737876 B2).
- [5] H. H. Cho, K. M. Kim, H. K. Moon, **B. S. Kim**, J. S. Park, S. H. Kim (2017) "Supercritical fluid cooling gas turbine apparatus," US Patent (Patent No. US9638104 B2).
- [6] H. H. Cho, S. Shin, **B. S. Kim** (2016) "Highly efficient desalination system and method using multi-stage ionic field-effect transistor," Korea Patent (Patent No. 10-1592892).
- [7] H. H. Cho, K. M. Kim, H. Moon, **B. S. Kim**, J. S. Park (2015) "Super critical fluid gas cooling gas turbine device," Korea Patent (Patent No. 10-1485020).
- [8] H. H. Cho, S. Shin, **B. S. Kim** (2014) "Highly efficient nanofluidic energy harvesting system and method using ionic field-effect transistor," Korea Patent (Patent No. 10-1419742).
- [9] H. H. Cho, **B. S. Kim**, S. Shin, J. Song, T. Kim (2014) "Light-heat energy conversion module having nanostructured surface and method for fabricating the same," Korea Patent (Patent No. 10-1374272).
- [10] H. H. Cho, **B. S. Kim**, S. Shin, S. Lee, J. Song (2013) "Heat transfer element and method of manufacturing the same," Korea Patent (Patent No. 10-1273365).
- [11] W. Y. Lee, H. S. Kim, E. Y. Lee, **B. S. Kim**, H. H. Cho (2012) "Method for manufacturing hydrogen sensor and hydrogen sensor manufactured by the method," Korea Patent (Patent No. 10-1191522).

- [12] H. H. Cho, K. M. Kim, S. Lee, **B. S. Kim**, S. Shin, J. Song (2012) "Method for manufacturing structure and structure for removing bubble," Korea Patent (Patent No. 10-1163639).
- [13] H. H. Cho, Y. Kim, D. H. Lee, J. H. Kim, **B. S. Kim** (2012) "Layered type micro heat flux sensor," Korea Patent (Patent No. 10-1152839).
- [14] H. H. Cho, S. Lee, J. H. Yun, S. Shin, H. G. Kwon, **B. S. Kim** (2011) "Bipolar plate with nano and micro structures," Korea Patent (Patent No. 10-1075518).
- [15] H. H. Cho, M. O. Lee, K. M. Kim, D. H. Lee, **B. S. Kim**, S. Lee, S. Shin (2011) "PCR device which has a real-time monitoring function and method of real-time monitoring the same," Korea Patent (Patent No. 10-1040489).
- [16] H. I. Jung, Y. Kim, H. H. Cho, B. S. Kwak, **B. S. Kim**, S. I. Yoon (2010) "Micro heat measuring system in bio-calorimeter," Korea Patent (Patent No. 10-0997382).
- [17] H. H. Cho, H. I. Jung, **B. S. Kim**, B. S. Kwak (2010) "Method of measuring reaction temperature of bio fluids, microcalorimeter using the same and method of manufacturing the microcalorimeter," Korea Patent (Patent No. 10-0948703).
- [18] H. H. Cho, M. S. Yu, D. H. Lee, J. J. Lee, **B. S. Kim**, S. Shin (2007) "Apparatus of PCR using constant temperature metal block and method thereof," Korea Patent (Patent No. 10-0790004).

Applied Patent

- [1] **B. S. Kim**, T. J. Ahn, J. G. Kang, H. Kim, K. J. Kim, D. H. Lee, D. W. Kim (2025) "A cooling system for power converter with serpentine-cross channel," Korea Patent (Application No. 10-2025-0133179).
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