

Contact Information

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Education

- 2004. 3 ~ 2010. 8 **Ph. D.**, Department of Chemistry, KAIST
Advisor : Prof. Bongsoo Kim
Dissertation : Development of nanowire based SERS sensor:
Optical properties and biomedical applications
- 2000. 3 ~ 2004. 2 **B. S.**, Department of Chemistry, KAIST

Appointments

- 2020. 3 ~ Present **Principal Researcher**, Bionanotechnology Research Center KRIBB
- 2017. 9 ~ Present **Adjunct Professor**, Department of Biological Sciences, KAIST
- 2012. 10 ~ 2020. 2 **Senior Researcher**, Bionanotechnology Research Center KRIBB
- 2017. 3 ~ 2020. 2 **Associate Professor**, Department of Nanobiotechnology, KRIBB School of Biotechnology, UST
- 2014. 1 ~ 2017. 4 **Senior Researcher**, BioNano Health Guard Research Center in Global Frontier Program, KRIBB
- 2015. 3 ~ 2017. 2 **Assistant Professor**, Major of Nanobiotechnology and Bioinformatics, UST
- 2010. 9 ~ 2012. 8 **Post-doctoral Researcher**, Department of Chemistry, KAIST

Awards & Honor

Awards

1. [Commendation from MSIT Minister of Korea, 2022](#)
2. [NNFC Collaboration Research Award, 2022](#)
3. [BioChip Journal Academic Award, 2021](#)

4. [Industry-University Cooperation Achievement Award from the Korea BioChip Society, 2021](#)
5. [KRIBB Paper Award of the Year, 2021](#)
6. [KRIBB People of the Month, 2021](#)
7. [Early Career Achievement Award from the Korean BioChip Society, 2020](#)
8. [Korea Center for Women in Science, Engineering, and Technology Award Winner, 2018](#)
[[Highlighted in Domestic Newspapers](#)]
9. [7th Samsung Electro-Mechanics Inside Edge Thesis Award Silver Prize Winner, 2011](#)

Editorial Service

1. Associate Editor, BioChip Journal, **Jan. 1, 2022 ~ Present**
2. Editorial Board Member, Biosensors, **Mar. 1, 2020 ~ Present**
3. Vacuum Magazine, **Jun. 1, 2017 ~ May 31, 2020**

Educational Service

1. UST Examination Problem Bank Construction Committee Member, **2018**

Conferences

1. **Panel of Judges for Best Poster Award**, 2022 Spring Meeting of the Korean BioChip Society, Paradise Hotel Busan, Busan, Korea, **May. 18 ~ 20, 2022**
2. **Special Session Organization Chair**, 2021 Fall Meeting of the Korean BioChip Society, Shinhwa World, Jeju, Korea, **Nov. 17 ~ 19, 2021**
3. **Panel of Judges for Best Poster Award**, 2021 Spring Meeting of the Korean BioChip Society, Vivaldi Park, Hongcheon, Korea, **Jun. 16 ~ 18, 2021**
4. **Panel of Judges for Best Poster Award**, Nano Korea 2019, KINTEX, Ilsan, Korea, **Jul. 3 ~ 5, 2019**
5. **Committee**, Nano Korea 2019, KINTEX, Ilsan, Korea, **Jul. 3 ~ 5, 2019**
6. **Session Chair**, The 26th International Conference on Raman Spectroscopy (ICORS 2018), ICC, Jeju, Korea, **Aug. 26 ~ 31, 2018**
7. **Panel of Judges for Best Poster Award**, The 26th International Conference on Raman Spectroscopy (ICORS 2018), ICC, Jeju, Korea, **Aug. 26 ~ 31, 2018**
8. **Session Chair**, Nano Convergence Conference 2018, aT Center, Seoul, Korea, **Jan. 10 ~ 11, 2018**
9. **Panel of Judges for Best Poster Award**, 3rd BioNano Health Guard Research Center Workshop, Maison Glad Jeju, Jeju, Korea, **Jan. 18 ~ 19, 2016**

10. **Panel of Judges for Best Poster Award**, 45th Summer Meeting of the Korean Vacuum Society, Yeosu the Ocean Resort, Yeosu, Korea, **Aug. 21 ~ 23, 2013**
11. **Session Chair**, 2nd Bio Convergent Diagnosis R&D Partnering & Technology Transfer Forum, The Shilla Jeju, Jeju, Korea, **Feb. 27 ~ Mar. 1, 2013**

Memberships

1. American Chemical Society
2. Materials Research Society
3. The Korean BioChip Society
4. The Korean Chemical Society
5. Korea Nano Technology Research Society
6. Korean Society for Extracellular Vesicles
7. Korean Society of Food Science and Technology

Projects

Ongoing

1. **Market-led K-Sensor Technology Development Program**
"Nano-Opto-Biosensor Technology for Real-time and Rapid Diagnostics of Virus"
Participating Researcher, Ministry of Trade, Industry and Energy, Korea, **Apr. 1, 2022 ~ Present**
2. **Bio Medical Technology Development Program**
"Development of Diagnostic Platform Technology for Future Emerging and Re-emerging Infectious Diseases - Securing of Biocontents and Analytic Platform Technology Development for the Diagnosis of Infectious Disease"
Principal Investigator (Total Research Project), Ministry of Science and ICT, Korea, **Jun. 1, 2021 ~ Present**
3. **Nano Material Technology Development Program**
"Development of ultrasensitive array sensor based on 3D CRISPLAS Nanobio materials for early cancer diagnosis - Development of CRISPR materials for cancer diagnosis and application to 3D plasmonic nanostructures"
Principal Investigator (Unit Research Project), Ministry of Science and ICT, Korea, **Apr. 1, 2021 ~ Present**
4. **Environmental Technology Development Program**
"Development of analysis and measurement technology for biological hazardous materials in environmental aerosol - Development of on-site portable detection technology"
Participating Researcher, Ministry of Environment, Korea, **Apr. 1, 2021 ~ Present**

5. **Nanomaterials Development Program**
"Development of uncontact digital PCR for next wave (post corona)"
Participating Researcher, National Research Council of Science & Technology, Korea,
Jan. 1, 2021 ~ Present
6. **KRIBB Initiative Research Program**
"Development of Theragnosis Platforms Based on Bionanotechnology"
Participating Researcher, Ministry of Science and ICT, Korea, **Jan. 1, 2019 ~ Present**
7. **Bio Medical Technology Development Program**
"Development of exoNA Diagnosis Device for Companion Diagnostics and Monitoring of HER2 Overexpressed Cancer - Development of High-Precision, High-Sensitive exoNA Detection Technology based on Fluorescence Signal Amplification Probe"
Participating Researcher, Ministry of Science and ICT, Korea, **Apr. 1, 2018 ~ Present**
8. **Global Frontier Program**
"BioNano Health Guard Research - Development of Practical Technologies and System for Early Detection & Diagnostics of Infectious Pathogens - Securement of Bio-Contents for H-GUARD System and Development of Practical Technologies for Early Detection & Diagnostics - Development of Nanobio Interfacing Platform Technologies for Health Guard"
Principal Investigator (Consignment Research Project), Ministry of Science and ICT, Korea, **Mar. 1, 2018 ~ Present**
"BioNano Health Guard Research - Development of Fabrication Technologies for 3D Nano-micro Hybrid Structures for Nano Health Guard and its Application - Technology Developments for Design and Application of 3D Nanostructures to Control the Biomolecular Sensing Signals"
Principal Investigator (Unit Research Project), Ministry of Science and ICT, Korea, **Sep. 1, 2014 ~ Feb. 28, 2018**

Finished

1. **Basic Research Program**
"Technology Development for the Collection/Detection of Super-Bacteria by using Nanostructure-CRISPR Convergence Materials"
Principal Investigator, Ministry of Science and ICT, Korea, **Mar. 1, 2019 ~ Feb. 28, 2022**
2. **Creative Allied Program**
"Development of the human immune system-based therapeutic agents against RNA viruses"
Participating Researcher, National Research Council of Science & Technology, Korea, **Jul. 1, 2020 ~ Jun. 30, 2021**
3. **KRIBB Initiative Research Program**

- "Study on the Optimized Assembly of High Functional Nanostructure and High Performance Bioreceptor: Construction of Ideal NanoBio Convergence Platform" – **A Grade**
Principal Investigator, Ministry of Science and ICT, Korea, **Apr. 1, 2019 ~ Dec. 31, 2020**
4. **KRIBB Initiative Research Program**
"Optimization of antibody detection technology for serosurveillance"
Participating Researcher, Ministry of Science and ICT, Korea, **May 21, 2020 ~ Dec. 31, 2020**
5. **Future Leading Technology Development Program**
"Development of Point-Of-Care-Test for Discriminating Safety of Fresh Meat - Development of Bioelectronic Noses for Measuring Meat Freshness"
Participating Researcher, Ministry of Science and ICT, Korea, **Aug. 17, 2018 ~ Mar. 31, 2020**
6. **KRIBB Initiative Research Program**
"Development of Nanobiomedical Convergence Technology" [[Highlighted in Domestic Newspapers](#)]
Participating Researcher, Ministry of Science and ICT, Korea, **Jan. 1, 2015 ~ Dec. 31, 2018**
7. **KRIBB R&D Planning Program**
"Development Project of Convergence Nanomaterials for Smart Patch which Can Recognize and Control the Biological Function"
Planning Committee Member, Ministry of Science and ICT, Korea, **Mar. 1, 2018 ~ Dec. 31, 2018**
8. **Environmental Technology Development Program**
"Development of Safety Test Technology for Mixed Biocide Based on AOP – Product Development of Biocide Detector Based on AOP"
Participating Researcher, Ministry of Environment, Korea, **Jun. 1, 2018 ~ Dec. 31, 2018**
9. **Convergence Cluster Support Program**
"Convergence Cluster for the Development of Nanomedicine Innovative Technology-based Disease Response Platform"
Participating Researcher, National Research Council of Science & Technology, Korea, **Dec. 26, 2016 ~ Dec. 25, 2017**
10. **Public Welfare & Safety Research Program**
"Technology Development for Rapid On-Site Screening of Food Poisoning Pathogens - Development of Detection Technologies and Integrated Module Systems for Rapid Screening of Food Poisoning pathogens" [[Highlighted in Domestic Newspapers](#)] [[Highlighted in The Science & Technology](#)] – **A Grade**
Principal Investigator (Unit Research Project), Ministry of Science, ICT & Future

Planning, Korea, **Sep. 1, 2013 ~ Jul. 31, 2017**

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Dec. 1, 2012 ~ Aug. 31, 2013**

11. Global Frontier Program

"BioNano Health Guard Research - Development of Technologies for Acquisition and Application of Biocontents for BioNano Convergence Health Guard - Development of Platform Technologies for Acquisition/Modification/Application and Analysis of Biocontents for BioNano Convergence Health Guard" [[Highlighted in Nano Insight](#)] [[Highlighted in YTN](#)] [[Highlighted in YTN SCIENCE](#)] [[Highlighted in Domestic Newspapers](#)] [[Highlighted in Chemistry World](#)] [[Highlighted in APBN](#)] [[Highlighted in Nano Insight](#)]

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Jan. 1, 2014 ~ Apr. 31, 2017**

12. Research Planning and Evaluation Program

"A Study on the Technology for Collection and Detection of Hazardous Biosubstances"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Jul. 1, 2016 ~ Oct. 31, 2016**

13. K-Valley RED&B Program

"Development of Ultrasensitive SERS Sensor for Early Diagnosis of Cancer"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Mar. 1, 2016 ~ Aug. 31, 2016**

14. Foreign Technology Information Program

"Collection of NBIT Convergence Theragnosis Technology Information for the Realization of Personalized Medicine"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Nov. 16, 2015 ~ Mar. 31, 2016**

15. Pioneer Research Center Program

"Development of Nanopore based Biomolecular Sensing/Control System - Design of Protein-based Bio Contents and Technology Development for Nanopore Application"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Dec. 1, 2012 ~ Feb. 28, 2015**

16. KRIBB Initiative Research Program

"Development of Nanobiomedical Convergence Technology for Disease Diagnosis/Therapy"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Nov. 1, 2012 ~ Dec. 31, 2014**

17. K-Valley RED&B Program

"Optical Metasurface for Measuring Fine Refractive Index Change/Distribution and Analyzing Low-index Nano-biomaterials"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **May 12, 2014 ~ Dec. 11, 2014**

18. **SMEs Technology Mentoring Program**

"Technology Developments for Real-time Monitoring of Bacteria in Pipes during Preparation, Transportation, and Supply of Beverages" [[Highlighted in Domestic Newspapers](#)]

Representative Mentor, Ministry of Science, ICT & Future Planning, Korea, **Apr. 3, 2014 ~ Sep. 30, 2014**

19. **Bio Medical Technology Development Program**

"Production and Application of Biomolecules for Bio-electronical Devices"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Mar. 1, 2013 ~ Mar. 31, 2014**

20. **Pioneer Research Center Program**

"Bio Switch based Diagnostics·Imaging Convergence Research - Development of Novel Molecular Diagnosis and Imaging Technology Using Switch Molecules"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Mar. 1, 2013 ~ Feb. 28, 2014**

21. **Establishment of National Nanotechnology Map**

"2nd National Nanotechnology Map (2014 ~ 2025)" [[Highlighted in YTN SCIENCE](#)] [[Highlighted in Domestic Newspapers](#)]

Establishment Committee Member (Nanobio Subcommittee), Ministry of Science, ICT & Future Planning, Korea, **Jan. 1, 2014 ~ Feb. 28, 2014**

22. **Preliminary Feasibility Study**

"National Future Mega-Growth Engine Finding Program in a Viewpoint of Research Institutes Founded by Government - Health and Safety Society - Strengthening Techniques for Resilience against Multiple Compound Disasters"

Planning Committee Member (4th Subcommittee), Ministry of Science, ICT & Future Planning, Korea, **Nov. 1, 2013 ~ Dec. 31, 2013**

23. **Research Planning and Evaluation Program**

"Technology Convergence for Smart Health Monitoring using Innovative Nanotoxicity-free Biomolecular Nanomaterials with High Probe Activity"

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **Feb. 18, 2013 ~ Jul. 31, 2013**

24. **Research Planning and Evaluation Program**

"A Study on the BINT Convergence Health Guard Research" - **Selected as Global Frontier Program** [[Highlighted in Domestic Newspapers](#)] [[Highlighted in Domestic Newspapers](#)]

Participating Researcher, Ministry of Science, ICT & Future Planning, Korea, **May 1, 2013 ~ Jun. 28, 2013**

25. **KRIBB New Business Planning Program**

"Bio Convergent Mediation Research Center Construction Program" - Suspended

Planning Committee Member, Ministry of Science, ICT & Future Planning, Korea, **Jan.**

1, 2013 ~ Apr. 10, 2013

26. **KRIBB R&D Planning Program**

"Nanohealth Guard Research" – **1st Grade**

Planning Committee Member, Ministry of Education, Science, and Technology, Korea,
Nov. 1, 2012 ~ Dec. 31, 2012

Publications

Submitted

1. Y. Joung, K. Kim, S. Lee, B.-S. Chun, S. Lee, J. Hwang, **T. Kang**,* M.-K. Lee,* L. Chen,* and J. Choo*
"Rapid and accurate on-site immunodiagnostics of highly contagious SARS-CoV-2 using portable SERS-LFA reader"
2. Q. Yu,[†] H. D. Trinh,[†] Y. Lee,[†] ([†]co-first author) **T. Kang**,* L. Chen,* S. Yoon,* and J. Choo*
"SERS-ELISA Using Silica-encapsulated Au Core-Satellite Nanotags for Sensitive SARS-CoV-2 Detection"
3. C. S. H. Hwang, S. Lee, S. Lee, H. Kim, **T. Kang**, D. Lee,* and K.-H. Jeong*
"SERS Face Mask with Highly Adsorptive Au-TiO₂ Nanocomposites allows Machine-Learning based Quantitative Assay of SARS-CoV-2 in Breath Aerosols"
4. S. H. Lee,[†] W.-C. Lee,[†] I. B. Ansah,[†] ([†]co-first author) J.-Y. Yang, C. Mun, S. Jung, M.-Y. Lee, H. S. Jung, **T. Kang**, S. Lee, D.-H. Kim, and S.-G. Park*
"3D interior hotspots embedded with viral lysates for rapid and label-free identification of infectious diseases"
5. J. Song,[†] Y. Song,[†] ([†]co-first author) H. Jang, J. Moon, H. Kang, Y.-M. Huh, H. Y. Son, H. W. Rho, M. Park, E.-K. Lim, J. Jung, Y. Jung, H. G. Park, K. G. Lee,* S. G. Im,* and **T. Kang***
"Elution-Free DNA Detection using CRISPR/Cas9-mediated Light-up Aptamer Transcription: Toward All-in-One DNA Purification and Detection Tube"
6. Y. Li, H. Kim, Y. Ju, Y. Park, **T. Kang**, D. Yong, and H. G. Park*
"Ultrasensitive isothermal detection of SARS-CoV-2 based on self-priming hairpin-utilized amplification of G-rich sequence"
7. M. Lu, Y. Joung, C. S. Jeon, S. Kim, D. Yong, H. Jang, S. H. Pyun,* **T. Kang**,* and J. Choo*
"Dual-mode SERS-based lateral flow assay strips for simultaneous diagnosis of SARS-CoV-2 and influenza A virus"
8. K. Widyasari, J. Jang, S. Lee, **T. Kang**, and S. Kim*
"Evaluation of the T cell and B cell response following the administration of COVID-19 Vaccines in Korea"
9. K. Guk,[†] S. Y,[†] ([†]co-first author) H. Kim, Y. Bae, D. Yong, S. Kim, K.-S. Lee, E.-K. Lim, **T. Kang**,* and J. Jung*

"Hybrid CRISPR/Cas protein for one-pot detection of DNA and RNA"

Published & In Revision

1. S. Jang, S. U. Son, B. Kang, J. Lim, S. B. Seo, **T. Kang**, J. Jung, S. Seo,* and E.-K. Lim*
"Polydiacetylene-based hydrogel beads as colorimetric sensors for the detection of biogenic amines in spoiled food"
Food Chem. *In Revision*
2. B. Kang, M.-K. Shin, S. Han, I. Oh, J. Park, H. Y. Son, **T. Kang**, J. Jung, Y.-M. Huh,* S. Haam,* and E.-K. Lim*
"Magnetic nanochain-based smart drug delivery system with remote tunable drug release by a magnetic field"
BioChip J. **2022**, *In Press*
3. J. Song,[†] B. Cha,[†] ([†]co-first author) J. Moon, H. Jang, S. Kim, J. Jang, D. Yong, H.-J. Kwon, I.-C. Lee, E.-K. Lim, J. Jung, H. G. Park, and **T. Kang***
"Smartphone-Based SARS-CoV-2 and Variants Detection System using Colorimetric DNAzyme Reaction triggered by Loop-Mediated Isothermal Amplification (LAMP) with Clustered Regularly Interspaced Short Palindromic Repeats (CRISPR)"
ACS Nano **2022**, ASAP [[PDF](#)] [[Supporting Information](#)] [[Supporting Movie 1](#)] [[Supporting Movie 2](#)]
4. J. Lim,[†] J.-S. Hwang,[†] ([†]co-first author) S. B. Seo, B. Kang, S. Jang, S. U. Son, J. Ki, J.-S. Kim, **T. Kang**, J. Jung, T.-S. Han,* and E.-K. Lim*
"Janus hydrogel-based fuel stimulant powered amplification for multiple detections of miRNA biomarkers in gastric cancer"
Chem. Eng. J. **2022**, 448, 137637 [[PDF](#)] [[Supporting Information](#)]
5. S. Park, C. S. Jeon, N. Choi, J.-I. Moon, K. M. Lee, S. H. Pyun,* **T. Kang**,* and J. Choo*
"Sensitive and reproducible detection of SARS-CoV-2 using SERS-based microdroplet sensor"
Chem. Eng. J. **2022**, 446, 137085. [[PDF](#)] [[Supporting Information](#)] [[Supporting Movie 1](#)] [[Supporting Movie 2](#)] [[Highlighted in BRIC](#)]
6. S. B. Seo, J.-S. Hwang, E. Kim, K. Kim, S. Roh, G. Lee, J. Lim, B. Kang, S. Jang, S. U. Son, **T. Kang**, J. Jung, J.-S. Kim, K.-Hur, T.-S. Han,* E.-K. Lim*
"Isothermal amplification-mediated lateral flow biosensors for in vitro diagnosis of gastric cancer-related microRNAs"
Talanta **2022**, 246, 123502. [[PDF](#)] [[Supporting Information](#)]
7. J. Lim, S. Kim, S. J. Oh, S. M. Han, S. Y. Moon, B. Kang, S. B. Seo, S. Jang, S. U. Son, J. Jung, **T. Kang**, S. A. Park, M. Moon,* and E.-K. Lim*
"miRNA sensing hydrogels capable of self-signal amplification for early diagnosis of Alzheimer's disease"
Biosens. Bioelectron. **2022**, 209, 114279. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in Domestic Newspapers](#)]

8. B. Kang, Y. Lee, J. Lim, D. Yong, Y. K. Choi, S. W. Yoon, S. Seo, S. Jang, S. U. Son, **T. Kang**, J. Jung, K.-S. Lee, M. H. Kim,* and E.-K. Lim*
"FRET-based hACE2 receptor mimic peptide conjugated nanoprobe for simple detection of SARS-CoV-2"
Chem. Eng. J. **2022**, *442*, 136143. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in Domestic Newspapers](#)]
9. J. Moon, J. Song, H. Jang, H. Kang, Y.-M. Huh, H. Y. Son, H. W. Rho, M. Park, C. S. Talwar, K.-H. Park, E. Woo, J. Lim, E.-K. Lim, J. Jung, Y. Jung, H. G. Park,* and **T. Kang***
"Ligation-free isothermal nucleic acid amplification"
Biosens. Bioelectron. **2022**, *209*, 114256. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in BRIC](#)]
10. S. Lee, K. Widyasari, H. R. Yang, J. Jang, **T. Kang**, and S. Kim*
"Evaluation of the Diagnostic Accuracy of Nasal Cavity and Nasopharyngeal Swab Specimens for SARS-CoV-2 Detection via Rapid Antigen Test According to Specimen Collection Timing and Viral Load"
Diagnostics **2022**, *12*, 710. [[PDF](#)] [[Supporting Information](#)]
11. H. Y. Kim,[†] J. Song,[†] ([†]co-first author) H. G. Park,* and **T. Kang***
"Electrochemical detection of zeptomolar miRNA using an RNA-triggered Cu²⁺ reduction method"
Sens. Actuat. B **2022**, *360*, 131666. [[PDF](#)] [[Supporting Information](#)]
12. S. Jang,[†] S. U. Son,[†] ([†]co-first author) B. Kang, J. Kim, J. Lim, S. Seo, **T. Kang**, J. Jung, K.-S. Lee, H. Kim,* and E.-K. Lim*
"Electrospun Nanofibrous Membrane-Based Colorimetric Device for Rapid and Simple Screening of Amphetamine-Type Stimulants in Drinks"
Anal. Chem. **2022**, *94*, 3535. [[PDF](#)] [[Supporting Information](#)] [[Cover](#)]
13. H. Cha, H. Kim, Y. Joung, H. Kang, J. Moon, H. Jang, S. Park, H.-J. Kwon, I.-C. Lee, S. Kim, D. Yong, S.-W. Yoon, S.-G. Park, K. Guk, E.-K. Lim, H. G. Park, J. Choo,* J. Jung,* and **T. Kang***
"Surface-enhanced Raman scattering-based immunoassay for severe acute respiratory syndrome coronavirus 2"
Biosens. Bioelectron. **2022**, *202*, 114008. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in BRIC](#)]
14. H. Chen,[†] S.-K. Park,[†] ([†]co-first author) Y. Joung, **T. Kang**,* M.-K. Lee,* and J. Choo*
"SERS-based dual-mode DNA aptasensors for rapid classification of SARS-CoV-2 and influenza A/H1N1 infection"
Sens. Actuat. B **2022**, *355*, 131324. [[PDF](#)] [[Supporting Information](#)]
15. W. S. Lee, H. Kim, Y. Sim, **T. Kang**, and J. Jeong*
"Fluorescent Polypropylene Nanoplastics for Studying Uptake, Biodistribution, and Excretion in Zebrafish Embryos"
ACS Omega **2022**, *7*, 2467. [[PDF](#)] [[Supporting Information](#)]

16. J. Lim, B. Kang, H. Y. Son, B. Mun, Y.-M. Huh, H. W. Rho, **T. Kang**, J. Moon, J.-J. Lee, S. B. Seo, S. Jang, S. U. Son, J. Jung, S. Haam,* and E.-K. Lim*
"Microfluidic device for one-step detection of breast cancer-derived exosomal mRNA in blood using signal-amplifiable 3D nanostructure"
Biosens. Bioelectron. **2022**, *197*, 113753. [[PDF](#)] [[Supporting Information](#)] [[Supporting Movie](#)] [[Highlighted in Domestic Newspapers](#)]
17. Q. Yu,[†] Y. Wu,[†] ([†]co-first author) **T. Kang**,* and J. Choo*
"Development of SERS-Based Immunoassay Platforms Using Hollow Au Nanostars for Reliable SARS-CoV-2 Diagnosis"
Bull. Korean Chem. Soc. **2021**, *42*, 1699. [[PDF](#)]
18. H. Kim, S. G. Hwang, K. Guk, Y. Bae, H. Park, E.-K. Lim,* **T. Kang**,* and J. Jung*
"Development of antibody against drug-resistant respiratory syncytial virus: Rapid detection of mutant virus using split superfolder green fluorescent protein-antibody system"
Biosens. Bioelectron. **2021**, *194*, 113593. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in BRIC](#)]
19. G. Eom, A. Hwang, H. Kim, J. Moon, J. Jung, E.-K. Lim, J. Jeong, H. G. Park, and **T. Kang***
"Ultrasensitive Detection of Ovarian Cancer Biomarker Using Au Nanoplate SERS Immunoassay"
BioChip J. **2021**, *15*, 348. [[PDF](#)]
20. W. S. Lee, J. Ahn, S. Jung, J. Lee,* **T. Kang**,* and J. Jeong*
"Biomimetic Nanopillar-Based Biosensor for Label-Free Detection of Influenza A Virus"
BioChip J. **2021**, *15*, 260. [[PDF](#)] [[Cover](#)]
21. S. U. Son,[†] S. Jang,[†] ([†]co-first author) B. Kang, J. Kim, J. Lim, S. Seo, **T. Kang**, J. Jung, K.-S. Lee, H. Kim,* and E.-K. Lim*
"Colorimetric paper sensor for visual detection of date-rape drug γ -hydroxybutyric acid (GHB)"
Sens. Actua. B. **2021**, *347*, 130598. [[PDF](#)] [[Supporting Information](#)]
22. C. S. Talwar, K.-H. Park, W.-C. Ahn, Y.-S. Kim, O. S. Kwon, D. Yong, **T. Kang**,* and E. Woo*
"Detection of Infectious Viruses Using CRISPR-Cas12-based Assay"
Biosensors **2021**, *11*, 301. [[PDF](#)] [[Supporting Information](#)]
23. H. Kim,[†] H. Kang,[†] ([†]co-first author) H.-N. Kim, H. Kim, J. Moon, K. Guk, H. Park, D. Yong, P. K. Bae, H. G. Park, E.-K. Lim,* **T. Kang**,* and J. Jung*
"Development of 6E3 antibody-mediated SERS immunoassay for drug-resistant influenza virus"
Biosens. Bioelectron. **2021**, *187*, 113324. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in Domestic Newspapers](#)] [[Highlighted in BRIC](#)]
24. H. Chen,[†] S. G. Park,[†] ([†]co-first author) N. Choi, H.-J. Kwon, **T. Kang**,* M.-K. Lee,* and

- J. Choo*
"Sensitive Detection of SARS-CoV-2 Using a SERS-based Aptasensor"
ACS Sens. **2021**, *6*, 2378. [[PDF](#)] [[Supporting Information](#)]
25. H. Kim, B. Thong, K. H. Kim, J. Moon, H. Kang, K. Cho, R. Akter, J. Jeong, E.-K. Lim, J. Jung, H.-S. Choi, H. G. Park, O. S. Kwon, I. Yoon,* and **T. Kang***
"Au@ZIF-8 SERS Paper for Food Spoilage Detection"
Biosens. Bioelectron. **2021**, *179*, 113063. [[PDF](#)] [[Supporting Information](#)]
[[Highlighted in BRIC](#)]
26. K. H. Kim,[†] A. Hwang,[†] ([†]co-first author) Y. Song, W. S. Lee, J. Moon, J. Jeong, N. H. Bae, Y. M. Jung, J. Jung, S. Ryu, S. J. Lee, B. G. Choi,* **T. Kang,*** and K. G. Lee*
"3D Hierarchical Nanotopography for On-Site Rapid Capture and Sensitive Detection of Infectious Microbial Pathogens"
ACS Nano **2021**, *15*, 4777. [[PDF](#)] [[Supporting Information](#)] [[Supporting Movie](#)]
[[Supplementary Cover](#)] [[Highlighted in BRIC](#)] [[Highlighted in Domestic Newspapers](#)]
[[NNFC Collaboration Research Award](#)]
27. J. Moon, H.-J. Kwon, D. Yong, I.-C. Lee, H. Kim, H. Kang, E.-K. Lim, K.-S. Lee, J. Jung,* H. G. Park,* and **T. Kang***
"Colorimetric Detection of SARS-CoV-2 and Drug-Resistant pH1N1 Using CRISPR/dCas9"
ACS Sens. **2020**, *5*, 4017. [[PDF](#)] [[Supporting Information](#)]
28. H. Kim,[†] S. Lee,[†] ([†]co-first author) H. W. Seo, B. Kang, J. Moon, K. G. Lee, D. Yong, H. Kang, J. Jung, E.-K. Lim, J. Jeong, H. G. Park, C.-M. Ryu,* and **T. Kang***
"Clustered Regularly Interspaced Short Palindromic Repeats-Mediated Surface-Enhanced Raman Scattering Assay for Multidrug-Resistant Bacteria"
ACS Nano **2020**, *14*, 17241. [[PDF](#)] [[Supporting Information](#)] [[Highlighted in BRIC](#)]
[[KRIBB People of the Month](#)] [[KRIBB Paper Award of the Year](#)]
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"Synthesis of Single Crystalline Tellurium Nanotubes with Triangular and Hexagonal Cross Section"

J. Phys. Chem. B **2006**, *110*, 791. [[PDF](#)]

Proceeding

1. M. Kang, H. Kang, **T. Kang**, J. Kwak, and B. Kim^{*}

"Fabrication and Characterization of Single-Crystalline Au Nanowire Electrodes"

IEEE Nanotechnology Materials and Devices Conference 2011, 342. [[PDF](#)]

Patents

Issued

1. **T. Kang**, H. Kim, C.-M. Ryu, S. Lee, H. W. Seo, B. Kang, J. Moon, H. Kang, J. Jung, and E. K. Lim

"CRISPR-dCas9-mediated Surface-enhanced Raman Scattering Assay for Detecting Pathogen"

Korea 2022, 10-2370880

2. O. S. Kwon, **T. Kang**, C.-S. Lee, K. H. Kim, J. Y. Kim, S. J. Park, and J. Lee

"Carbene Compound, Carbene-Metal Nanoparticle Complex and Method for Manufacturing Thereof"

Korea 2021, 10-2291885 – **Technology Transferred to LG Electronics**

3. J. Jung, H. R. Kim, E. K. Lim, **T. Kang**, and K. H. Guk

"Antibody against oseltamivir resistant influenza virus"

Korea 2021, 10-2218980

4. **T. Kang**, K. G. Lee, A. R. Hwang, K. H. Kim, N. H. Bae, J. Y. Jeong, D. E. Yoo, D. W. Lee, M. K. Lee, S. J. Lee, W. S. Lee, T. J. Lee, E.-K. Lim, J. Jung, J. Moon, and J. Byun

"System and Method for Capturing and Assaying Hazardous Biomaterials Using Hybrid Nano-structures"

Korea 2019, 10-2041611

5. **T. Kang**, J. Moon, J. Jeong, W. S. Lee, E. K. Lim, and J. Jung

"Biosensor comprising coating layer modified with polydopamine and protein G mixture and method for detecting biological material using the same"

Korea 2019, 10-1971246

6. J. Jung, E. K. Lim, K. H. Guk, J. O. Keem, and **T. Kang**

"Method for detecting a target gene using a dCas9/gRNA complex and fluorescence marker"

Korea 2019, 10-1942947

7. B. Kim, M.-K. Seo, H. Lee, and **T. Kang**
"Optical Nano Antenna Using Single-Crystalline Ag Nanoplate, and Nano Optical Equipment Including the Same"
Korea 2014, 10-1382258
8. B. Kim, M. Kang, and **T. Kang**
"Transition Metal Nano Electrode and a Method of Fabricating Thereof"
Korea 2014, 10-1358989
9. B. Kim, H. Lee, and **T. Kang**
"Method of Fabricating an AuAg Nanowire"
Korea 2013, 10-1339962
10. B. Kim, **T. Kang**, and I. Yoon
"Optical Nano Antenna Using Single-Crystalline Ag Nanowire, Method of Manufacturing the Same and Optical Nano Antenna Using Single-Crystalline Metal Nanowire"
Korea 2013, 10-1251379
11. B. Kim, **T. Kang**, I. Yoon, S. Y. Lee, and S. M. Yoo
"Detection Method of Bio-Chemical Material using Surface-Enhanced Raman Scattering"
Korea 2011, 10-1059896
12. B. Kim, I. Yoon, and **T. Kang**
"Spectra Sensor for Surface-enhanced Raman Scattering"
Korea 2009, 10-0892629
13. W. Lee, B. Kim, W. Jung, K. Lee, S. Shim, and **T. Kang**
"Room Temperature Ferromagnetic ZnS Nanobelts and the Fabrication Method Thereof"
Korea 2007, 10-0666729

Pending

1. **T. Kang**, K. G. Lee, J. Song, S. G. Im, Y. Song, Y. M. Park, H. Jang, H. Kang, H. Kim, E. K. Lim, and J. Jung
"Kit for detecting nucleic acid based on CRISPR/Cas9 and method using the same"
Korea 2022, 10-2022-0082014
2. E. K. Lim, M. H. Kim, B. Kang, Y. Lee, **T. Kang**, J. Lim, S. Seo, S. U. Son, S. Jang, J. Jung, and K.-S. Lee
"A human angiotensin-converting enzyme 2 receptor mimic peptide beacon and uses thereof"
Korea 2022, 10-2022-0076999
3. **T. Kang**, J. Moon, H. Jang, J. Song, H. Kang, E. K. Lim, and J. Jung
"Ligation-free isothermal nucleic acid amplification for detection of target nucleic acid"
Korea 2022, 10-2022-0052588
4. E. K. Lim, J. Lim, M. Moon, S. Kim, B. Kang, **T. Kang**, J. Jung, S. Seo, S. U. Son, and K.-

- S. Lee
"Degenerative brain disease diagnosis and monitoring technology based on body fluid test"
PCT 2022, 002357, **Korea 2021**, 10-2021-0024490
5. J. Jung, H. R. Kim, K. H. Guk, S. Y. Yi, **T. Kang**, and E. K. Lim
"An antibody specific to nucleoprotein of SARS-CoV-2 and uses thereof"
Korea 2022, 10-2022-0021781
6. **T. Kang**, J. Song, J. Moon, H. Jang, E. K. Lim, J. Jung
"Target gene detection system based on novel isothermal amplification technology"
Korea 2022, 10-2022-0001806
7. E. K. Lim, J. Lim, B. Kang, **T. Kang**, S. Seo, S. Jang, and J. Jung
"Gene detecting technology based on body fluid test"
PCT 2021, 015826, **Korea 2021**, 10-2021-0150099
8. J. Jung, K. H. Guk, H. R. Kim, **T. Kang**, E. K. Lim, and Y. J. Bae
"Cas complex for simultaneous detection of DNA and RNA and uses thereof"
Korea 2021, 10-2021-0151822
9. J. Jung, H. R. Kim, K. H. Guk, **T. Kang**, and E. K. Lim
"Synagis-resistant respiratory syncytial virus detection method"
Korea 2021, 10-2021-0152000
10. **T. Kang**, J. Jung, H. R. Kim, H. Kang, J. Moon, H. Jang, K. H. Guk, and E. K. Lim,
"Surface-enhanced Raman Scattering (SERS)-based Immunoassay for virus"
Korea 2021, 10-2021-0134135
11. O. S. Kwon, **T. Kang**, C.-S. Lee, K. H. Kim, J. Y. Kim, S. J. Park, and J. Lee
"Carbene Compound, Carbene-Metal Nanoparticle Complex and Method for Manufacturing Thereof"
USA 2021, 17/284,249, **EP 2021**, 19871674.8, **Japan 2021**, 2021-520142, **China 2021**, 201980079045.3 – **Technology Transferred to LG Electronics**
12. E. K. Lim, S. Jang, S. U. Son, B. Kang, **T. Kang**, K.-S. Lee, and J. Jung
"Reagent Composition for Detecting Narcotic Illegal Drugs and Sheet-Like Kit for Detecting Illegal Drugs Comprising the Same"
PCT 2021, 006081, **Korea 2021**, 10-2021-0016939
13. **T. Kang**, J. Moon, J. Jung, K.-S. Lee, E. K. Lim, H. Kim, and H. Kang
"Target RNA Detecting Method Based on dCas9/gRNA Complex"
PCT 2021, 010284, **Korea 2021**, 10-2021-0102751, **Korea 2020**, 10-2020-0097531
14. E. K. Lim, S. U. Son, S. Jang, **T. Kang**, K.-S. Lee, and J. Jung
"Drug Delivery Composition for Percutaneous Absorption and method of preparing the same"
Korea 2020, 10-2020-0077029

15. J. Jung, H. R. Kim, K.-S. Lee, K. H. Guk, E. K. Lim, and **T. Kang**
"Antibody for Periodontal Disease and use Thereof"
Korea 2020, 10-2020-0117038

Presentations

Invited Seminars

1. "To Be Announced"
130th Meeting of the Korean Chemical Society, HICO, Gyeongju, Korea, **Oct. 19 ~ 21, 2022**
2. "To Be Announced"
2022 Fall Meeting of the Korean Society for Biomaterials, Sono Belle Jeju, Jeju, Korea, **Sep. 28 ~ 30, 2022**
3. "To Be Announced"
2022 Fall Meeting of the Korean Sensors Society, Yeosu the Ocean Resort, Yeosu, Korea, **Aug. 24 ~ 26, 2022**
4. "Convergence Bionanotechnology for Disease Diagnosis"
Institute of Quantum Biophysics, Sungkyunkwan University, Suwon, Korea, **Jul. 5, 2022**
5. "CRISPR/Cas System-based Precise Gene Detection Technology"
KRIBB-H-GUARD Symposium, KRIBB, Daejeon, Korea, **Jun. 28, 2022**
6. "Convergence Bionanotechnology for Disease Diagnosis"
Department of Bio and Brain Engineering, KAIST, Daejeon, Korea, **Apr. 27, 2022**
7. "Convergence Bionanotechnology for Infectious Disease Diagnosis"
2021 Fall Meeting of the Korean BioChip Society, Shinhwa World, Jeju, Korea, **Nov. 17 ~ 19, 2021**
8. "Convergence BioNanotechnology for Disease Diagnosis"
Daejeon, Chungnam, Sejong Academic Symposium of Korean Chemical Society, Hannam University, Daejeon, Korea, **Nov. 6, 2021**
9. "Convergence BioNanotechnology for Disease Diagnosis"
Colloquium Fall 2021, Pusan National University, Online Meeting, **Oct. 27, 2021**
10. "Convergence BioNanotechnology for Diagnosis of Infectious Diseases"
2021 3rd Technology Exchange Meeting, Government-wide R&D Fund for Infectious Diseases Research, Osong, Korea, **Sep. 13, 2021**
11. "Convergence BioNanotechnology for Diagnosis of Infectious Diseases"
2021 KRIBB-GBSA TechBiz Partnering, Online Meeting, **Jul. 1, 2021**
12. "Convergence BioNanotechnology for Disease Diagnosis"
IQB Colloquium Spring 2021, Sungkyunkwan University, Suwon, Korea, **Jun. 4, 2021**

13. "Convergence Bionanotechnology for Disease Diagnosis"
2021 1st Technology Strategy Seminar, National Research Council of Science & Technology, Sejong National Research Complex, Sejong, Korea, **Mar. 31, 2021**
14. "Exosomal RNA Detection using Isothermal Gene Amplification Method"
KSEV 1st WebEVChat, Online Meeting, **Feb. 18, 2021**
15. "Integrative BioNanotechnology for Disease Diagnosis"
Department of Integrated Biotechnology, Sungkyunkwan University, Suwon, Korea, **Nov. 11, 2020**
16. "Noble Metal Nanostructures for Biomolecular Sensing"
125th Meeting of the Korean Chemical Society, Online Meeting, **Jul. 7, 2020**
17. "Convergence Bionanotechnology for Disease Diagnosis"
Department of Chemistry, KAIST, Daejeon, Korea, **Apr. 29, 2020**
18. "Noble Metal Nanostructures for Biomolecular Sensing"
Seoul Center, KBSI, Seoul, Korea, **Oct. 1, 2019**
19. "Food Science and Biotechnology based on Convergence Research"
Department of Biotechnology, College of Life Science and Biotechnology, Yonsei University, Seoul, Korea, **Sep. 5, 2019**
20. "Noble Metal Nanostructures for Biomolecular Sensing"
2019 Fall Meeting of the Korean Sensors Society, Lakai Sandpine, Gangneung, Korea, **Aug. 28 ~ 30, 2019**
21. "Synthesis of Noble Metal Nanostructures and Biosensing Applications"
Center for Theragnosis, KIST, Seoul, Korea, **Aug. 27, 2019**
22. "Food Science and Biotechnology based on Convergence Research"
Food Science and Biotechnology Major, College of Agriculture and Life Sciences, Seoul National University, Seoul, Korea, **May 28, 2019**
23. "Synthesis of Noble Metal Nanostructures and Biomedical Applications"
Philosys, Seong-Nam, Korea, **Dec. 18, 2018**
24. "Synthesis of Noble Metal Nanostructures and Biomedical Applications"
Material Chemistry Research Institute, Chungnam National University, Daejeon, Korea, **Nov. 22, 2018**
25. "Convergence Research on Food Science and Biotechnology"
Food Science and Biotechnology Major, College of Agriculture and Life Sciences, Seoul National University, Seoul, Korea, **Nov. 20, 2018**
26. "Synthesis of Noble Metal Nanostructures and Biomedical Applications"
Annual Biophotonics Conference 2018, Asia Culture Center, Gwangju, Korea, **Oct. 26 ~ 27, 2018**
27. "Synthesis of Nanostructures and Biomedical Applications"

- Department of Chemistry*, Kongju National University, Kongju, Korea, **Sep. 17, 2018**
28. "Synthesis of Au Nanostructures and Biomedical Applications"
The 26th International Conference on Raman Spectroscopy (ICORS 2018), ICC, Jeju, Korea, **Aug. 26 ~ 31, 2018**
 29. "Convergence Research on Food Science and Biotechnology"
Food Science and Biotechnology Major, College of Agriculture and Life Sciences, Seoul National University, Seoul, Korea, **Jun. 18, 2018**
 30. "Noble Metal Nanowires for Biomedical Applications"
Department of Optics & Mechatronics Engineering, Pusan National University, Pusan, Korea, **Dec. 19, 2017**
 31. "Noble Metal Nanowires for Biomedical Applications"
46th International Symposium on High Performance Liquid Phase Separations and Related Techniques (HPLC 2017 Jeju), ICC, Jeju, Korea, **Nov. 5 ~ 9, 2017**
 32. "Synthesis of Au Nanostructure and Biosensing Application"
KRIBB Conference, Hazards Monitoring Bionano Research Center, KRIBB, Daejeon, Korea, **Nov. 1, 2017**
 33. "Nanobio Sensing using Gold Nanowire"
The 3rd SPIE's International Conference on Nano-Bio Sensing, Imaging & Spectroscopy, ICC, Jeju, Korea, **Feb. 22 ~ 24, 2017**
 34. "BioNano Health Guard"
2016 Fall Meeting of the Korean BioChip Society, Hanwha Resort Haeundae Tivoli, Busan, Korea, **Oct. 26 ~ 28, 2016**
 35. "Synthesis of Noble Metal Nanostructures and Biomedical Applications"
Department of Chemistry, Gyeongsang National University, Jinju, Korea, **Oct. 29, 2015**
 36. "Introduction of BioNano Health Guard Research Center"
KRIBB Conference, Super Bacteria Research Center, KRIBB, Daejeon, Korea, **Mar. 26, 2014**
 37. "Noble Metal Nanowires for Biomedical Applications"
The Seo Group, Interdisciplinary School of Green Energy, UNIST, Ulsan, Korea, **Jan. 17, 2014**
 38. "Noble Metal Nanowires for Biomedical Applications"
Germany-Korea Nano Bio Material Expert Workshop, KIST Europe, Saarbrückent, Germany, **Oct. 15 ~ 17, 2013** [[Highlighted in Domestic Newspapers](#)]
 39. "Noble Metal Nanowire based SERS Sensor"
45th Summer Meeting of the Korean Vacuum Society, Yeosu the Ocean Resort, Yeosu, Korea, **Aug. 21 ~ 23, 2013**

40. "Nanobio Sensors"
I²DEA Laboratory, Department of Industrial Design, KAIST, Daejeon, Korea, **Jul. 25, 2013**
41. "Noble Metal Nanowires for Biomedical Applications"
Germany-Korea Nano Technology Forum, KRICT, Daejeon, Korea, **Jul. 15, 2013**
42. "Noble Metal Nanowires for Biomedical Applications"
BioNanotechnology Research Center, KRIBB, Daejeon, Korea, **Aug. 28, 2012**
43. "Nanowire based Surface-enhanced Raman Scattering Sensor"
BioNanotechnology Research Center, KRIBB, Daejeon, Korea, **Oct. 10, 2011**

International Conferences

1. H. Jang and **T. Kang**
"Surface-Enhanced Raman Scattering-Based SARS-CoV-2 Detection using CRISPR/Cas12-mediated Isothermal Amplification"
Nature Conference Bio-Inspired Nanomaterials, Seoul National University, Seoul, Korea, **Nov. 15 ~ 7, 2021**
2. J. Moon, H. G. Park, and **T. Kang**
"Ligation-independent isothermal nucleic acid amplification: Detection of urinary exosomal mRNA"
Nature Conference Bio-Inspired Nanomaterials, Seoul National University, Seoul, Korea, **Nov. 15 ~ 7, 2021**
3. J. Song, B. Cha, and **T. Kang**
"Machine learning-based Colorimetric multiplex detection of SARS-CoV-2 by combining DNAzyme reaction triggered by RT-LAMP with CRISPR system"
Nature Conference Bio-Inspired Nanomaterials, Seoul National University, Seoul, Korea, **Nov. 15 ~ 7, 2021**
4. J. Moon, H. G. Park, and **T. Kang**
"Urinary Exosomal mRNA Detection using Novel Isothermal Gene Amplification Method based on Three-way Junction"
Nano Korea 2020, KINTEX, Ilsan, Korea, **Jul. 1 ~ 3, 2020**
5. H. Kang, J. Jung, and **T. Kang**
"An effective neutralizing antibody against H275Y oseltamivir resistance mutation in Influenza A/H1N1 2009 and its implication for diagnostic detection"
Nano Korea 2020, KINTEX, Ilsan, Korea, **Jul. 1 ~ 3, 2020**
6. **T. Kang**
"Synthesis of Noble Metal Nanostructures and Biomedical Applications"
Nano Korea 2019, KINTEX, Ilsan, Korea, **Jul. 2 ~ 5, 2019**
7. J. Moon and **T. Kang**
"Surface-Independent Antibody Immobilization via One-step Polydopamine/Protein G

- Coating: Application to Influenza Virus Immunoassay"
Nano Korea 2019, KINTEX, Ilsan, Korea, **Jul. 2 ~ 5, 2019**
8. H. Kim and **T. Kang**
"Nanowire based Surface-enhanced Raman Scattering Platform for Biochemical Sensing"
The 26th International Conference on Raman Spectroscopy (ICORS 2018), ICC, Jeju, Korea, **Aug. 26 ~ 31, 2018**
 9. **T. Kang**
"Multivalent antibody-nanoparticle conjugates to enhance the sensitivity of SERS-based immunoassays"
SPIE Nanoscience + Engineering, San Diego Convention Center, San Diego, USA, **Aug. 19 ~ 23, 2018**
 10. W. S. Lee, **T. Kang**, and J. Jeong
"Label-Free Detection of Influenza Virus Using Biomimetic Nanopillar-Based Biosensor"
2017 MRS Fall Meeting, Hynes Convention Center, Boston, USA, **Nov. 26 ~ Dec. 1, 2017**
 11. **T. Kang**
"Nanogap-Rich Au Nanowire SERS Sensor for Ultrasensitive Telomerase Activity Detection: Application to Gastric and Breast Cancer Tissue Diagnosis"
EMN Meeting on Colloid and Interface, Chatrium Hotel, Bangkok, Thailand, **Nov. 12 ~ 16, 2017**
 12. G. Eom, A. Hwang, B. Kim, and **T. Kang**
"Au Nanoparticles-deposited Au Nanowire SERS Sensor for Telomerase Activity Detection in Cancer Cells and Tissues"
BIEN 2017, The Plaza Hotel, Seoul, Korea, **Aug. 31 ~ Sep. 2, 2017**
 13. K. Park, B. Kim, and **T. Kang**
"Fabrication of nanowire-based nonviral vector for effective delivery of DNA into stem cell"
BIEN 2017, The Plaza Hotel, Seoul, Korea, **Aug. 31 ~ Sep. 2, 2017**
 14. K. Guk, S. Hwang, J. M. Choi, **T. Kang**, P. Bae, J. Jung, and E.-K. Lim
"Colorimetric detection of influenza A (H1N1) virus by a peptide-functionalized polydiacetylene (PEP-PDA) nanosensor"
BIEN 2017, The Plaza Hotel, Seoul, Korea, **Aug. 31 ~ Sep. 2, 2017**
 15. J. Moon and **T. Kang**
"Facile Immobilization of Antibody using Polydopamine and Protein G Mixture: Towards Substrate-Free Influenza Virus Detection"
Nano Korea 2017, KINTEX, Ilsan, Korea, **Jul. 12 ~ 14, 2017**
 16. A. Hwang, H. Lee, **T. Kang**, and B. Kim
"Well-Ordered Troponin Apatamers on Ultraflat, Ultraclean Gold Nanoplates for Early-Diagnosis of Acute Myocardial Infarction"

- Nano Korea 2017***, KINTEX, Ilsan, Korea, **Jul. 12 ~ 14, 2017**
17. G. Eom, B. Kim, and **T. Kang**
"Sensitive and Specific Detection of Telomerase Activity using Au Nanoparticles-deposited Au Nanowire SERS Sensor"
Nano Korea 2017, KINTEX, Ilsan, Korea, **Jul. 12 ~ 14, 2017**
 18. K. Park, **T. Kang**, and B. Kim
"Efficient Transportation of Biomolecules for Living Cells by Novel Metal Nanowire"
Nano Korea 2017, KINTEX, Ilsan, Korea, **Jul. 12 ~ 14, 2017**
 19. **T. Kang**, G. Eom, A. Hwang, and J. M
"A novel and highly specific phage endolysin cell wall binding domain for detection of *Bacillus cereus*"
10th World Congress on Nutrition & Food Sciences, Hyatt Regency Osaka, Osaka, Japan, **May 29 ~ 31, 2017**
 20. J. Moon, G. Eom, A. Hwang, J. Byun, and **T. Kang**
"Real-time Detection of Aflatoxin B1 using Portable SPR"
The 3rd SPIE's International Conference on Nano-Bio Sensing, Imaging & Spectroscopy, ICC, Jeju, Korea, **Feb. 22 ~ 24, 2017**
 21. R. Gwak, H. Kim, **T. Kang**, and B. Kim
"Selective Monitoring of H₂O₂ Release from a Mechanically Stimulated Single HeLa Cell Using Prussian Blue modified Au Nanowire Electrode"
The 3rd SPIE's International Conference on Nano-Bio Sensing, Imaging & Spectroscopy, ICC, Jeju, Korea, **Feb. 22 ~ 24, 2017**
 22. **T. Kang**
"Single nanowire on graphene (SNOG) as an efficient, reproducible, and stable SERS-active platform"
11th International Conference and Expo on Nanoscience and Molecular Nanotechnology, Holiday Inn Rome Aurelia, Rome, Italy, **Oct. 20 ~ 22, 2016**
 23. J. Moon, S. Y. Yi, A. Hwang, G. Eom, J. Sim, J. Jeong, E.-K. Lim, B. H. Chung, B. Kim, J. Jung, and **T. Kang**
"Facile and sensitive identification of influenza viruses using SERS antibody probes"
Nano Korea 2016, KINTEX, Ilsan, Korea, **Jul. 13 ~ 15, 2016**
 24. J. Sim, M. Kong, **T. Kang**, S. Ryu, and B. H. Chung
"A Novel and Highly Specific Phage Endolysin Cell Wall Binding Domain for Detection of Foodborne Pathogens by Surface Plasmon Resonance"
ICCBE 2015, University Paris 8, Paris, France, **Jul. 20 ~ 22, 2015**
 25. G. Eom, **T. Kang**, and B. Kim
"Ultrasensitive Detection of Telomerase Activity by Au-sputtered Au Nanowire SERS Sensor"
ICCBE 2015, University Paris 8, Paris, France, **Jul. 20 ~ 22, 2015**

26. A. Hwang, **T. Kang**, and B. Kim
"Ultrasensitive Targeting from Well-ordered Antibodies on Ultraflat Single-crystalline Au Nanoplates for Attomolar Detection of C-reactive Protein"
ICCB 2015, University Paris 8, Paris, France, **Jul. 20 ~ 22, 2015**
27. G. Eom, **T. Kang**, and B. Kim
"Ultrasensitive detection of disease biomarker by Au nanoplate-Au nanoparticle platform"
Nano Korea 2015, COEX, Seoul, Korea, **Jul. 1 ~ 3, 2015**
28. J. Sim, M. Kong, **T. Kang**, S. Ryu, and B. H. Chung
"Highly Sensitive Detection of *Bacillus cereus* Food Poisoning using Magnetic Nanoparticles"
Nano Korea 2015, COEX, Seoul, Korea, **Jul. 1 ~ 3, 2015**
29. **T. Kang**, A. Hwang, H. Lee, M. Lee, E. Kim, and B. Kim
"Ultrasensitive Targeting from Well-ordered Antibodies on Ultraflat Single-crystalline Au Nanoplates for Detection of C-reactive Protein"
Nano Korea 2015, COEX, Seoul, Korea, **Jul. 1 ~ 3, 2015**
30. M. Kong, J. Sim, **T. Kang**, B. H. Chung, and S. Ryu
"Surface Plasmon Resonance Detection of *Bacillus cereus* using a Cell Wall Binding Domain of a Phage Endolysin"
EMBO Conference on Viruses and Microbes III, ETH Zurich, Zurich, Switzerland, **Jul. 14 ~ 18, 2014**
31. **T. Kang**, H. Kim, J. M. Lee, H. Lee, Y.-S. Choi, G. Kang, M.-K. Seo, B. H. Chung, and B. Kim
"Ultra-Specific Zeptomole MicroRNA Detection by Plasmonic Nanowire Interstice Sensor with Bi-Temperature Hybridization"
Nano Korea 2014, COEX, Seoul, Korea, **Jul. 2 ~ 4, 2014**
32. G. Eom, S. Kim, M. Kang, **T. Kang**, H. Lee, A. Hwang, H. Yang, and B. Kim
"Composition-Selective Fabrication of Ordered Intermetallic Au-Cu Nanowires; Application in Interference-Free Electrochemical Glucose Sensors"
Nano Korea 2014, COEX, Seoul, Korea, **Jul. 2 ~ 4, 2014**
33. J. Sim, M. Kong, **T. Kang**, S. Ryu, and B. H. Chung
"Surface Plasmon Resonance Detection of Foodborne Pathogens by Phage Endolysin Cell Wall Binding Domains and Magnetic Nanoparticle"
Nano Korea 2014, COEX, Seoul, Korea, **Jul. 2 ~ 4, 2014**
34. H. Kim, **T. Kang**, J. M. Lee, H. Lee, G. Kang, Y. Jung, B. H. Chung, and B. Kim
"Detection of Multiple MicroRNAs by Patterned Plasmonic Nanowire Sensor"
2013 DASAN CONFERENCE on Photonic Nanostructure-Based Bio-Detection Technologies, Sheraton Grande Walkerhill, Seoul, Korea, **Sep. 25 ~ 27, 2013**
35. **T. Kang**, H. Kim, H. Lee, S. M. Yoo, S. Y. Lee, and B. Kim
"Facile Fabrication of Multi-targeted and Stable Biochemical SERS Sensors"

- ASIASENSE 2013**, Ramada Plaza Melaka, Melaka, Malaysia, **Aug. 27 ~ 29, 2013**
[Highlighted in BT News]
36. **T. Kang**
"Noble Metal Nanowires for Biomedical Applications"
Thailand-Korea Bio Nano Joint Symposium 2013, Intercontinental Hotel Bangkok, Bangkok, Thailand, **Mar. 29 ~ 30, 2013**
37. S. M. Yoo, **T. Kang**, B. Kim, and S. Y. Lee
"Diagnosis of Genetic Disease using S1 Enzymatic Reaction-combined Nanowire Sensor"
2012 the Korea Society for Biotechnology and Bioengineering & International Symposium, Changwon Exhibition Convention Center, Changwon, Korea, **Apr. 11 ~ 13, 2012**
38. S. M. Yoo, **T. Kang**, B. Kim, and S. Y. Lee
"SERRS Sensor coupled with Target Recycling Reaction for Ultrasensitive and Multiplex Identification of Pathogenic Fungi"
2012 the Korea Society for Biotechnology and Bioengineering & International Symposium, Changwon Exhibition Convention Center, Changwon, Korea, **Apr. 11 ~ 13, 2012**
39. **T. Kang**, H. Kim, S. M. Yoo, S. Y. Lee, and B. Kim
"Aptameric Nanowire SERS Sensor for Molecular Detection"
2012 NTHU-KAIST Junior Chemists Symposium, National Tsing Hua University, Hsinchu, Taiwan, **Feb. 14 ~ 17, 2012**
40. M. Kang, H. Kang, **T. Kang**, J. H. Kwak, and B. Kim
"Fabrication and Characterization of Single-Crystalline Au Nanowire Electrode and its Biological Application"
2011 IEEE Nanotechnology Materials and Devices Conference, The Shilla Jeju, Jeju, Korea, **Oct. 18 ~ 21, 2011**
41. S. M. Yoo, **T. Kang**, I. Yoon, B. Kim, and S. Y. Lee
"Multiple Detection of Pathogenic Bacteria using Patterned Au Particle-on-Wire SERS Sensor"
International Conference on Cellular & Molecular Bioengineering, Nanyang Technological University, Nanyang, Singapore, **Aug. 2 ~ 4, 2010**
42. **T. Kang**, I. Yoon, W. Choi, Q.-H. Park, K.-S. Jeon, Y. D. Suh, J. Kim, H. Ihee, and B. Kim
"SERS active Platforms based on Noble Metal Nanowires"
AMN4 Conference, University of Otago, Dunedin, New Zealand, **Feb. 8 ~ 12, 2009**
43. **T. Kang**, I. Yoon, and B. Kim
"SERS-active Systems based on Noble Metal Nanowires"
10th KAIST-KYOTO Chemistry Symposium (1st KAIST-KYOTO-TSING HUA Chemistry Symposium), KAIST, Daejeon, Korea, **Dec. 20 ~ 23, 2008**
44. **T. Kang**, P. Mohanty, I. Yoon, K. Seo, K. S. K. Varadwaj, W. Choi, Q.-H. Park, J. P. Ahn,

Y. D. Suh, H. Ihee, and B. Kim

"Simple Vapor Phase Synthesis of Single-crystalline Ag NWs and Single NW Surface-enhanced Raman Scattering"

2008 BK International Symposium, Ramada Plaza Jeju Hotel, Jeju, Korea, **Feb. 21 ~ 23, 2008**

45. **T. Kang**, P. Mohanty, I. Yoon, K. Seo, K. S. K. Varadwaj, W. Choi, Q.-H. Park, J. P. Ahn, Y. D. Suh, H. Ihee, and B. Kim

"Simple Vapor Phase Synthesis of Single-crystalline Ag NWs and Single NW Surface-enhanced Raman Scattering"

2008 KAIST-NTHU Junior Chemists Workshop, KAIST, Daejeon, Korea, **Jan. 30 ~ Feb. 1, 2008**

46. **T. Kang**, J. Sung, P. Mohanty, B. Kim, W. Shim, and W. Lee

"Room Temperature Ferromagnetism in Mn and Fe co-doped ZnS Nanobelts"

2005 International Conference on Nanoscience and Nanotechnology, GIST, Gwangju, Korea, **Nov. 10 ~ 11, 2005**

Domestic Conferences

1. H. Kang, J. Jung, and **T. Kang**

"Development of a novel Antibody-Mediated SERS Immunoassay for Drug-Resistant Influenza Virus"

The 60th Winter Annual Conference of the Korean Vacuum Society, Online Meeting, **Feb. 4 ~ 6, 2021**

2. J. Moon, J. Jung, H. G. Park, and **T. Kang**

"Colorimetric Virus Detection using CRISPR/dCas9"

The 60th Winter Annual Conference of the Korean Vacuum Society, Online Meeting, **Feb. 4 ~ 6, 2021**

3. H. Kang, J. Jung, and **T. Kang**

"Development of Antibody-Mediated SERS Immunoassay for Drug-Resistant Influenza Virus"

2020 Fall Meeting of the Korean BioChip Society, Shinhwa World, Jeju, Korea, **Nov. 25 ~ 27, 2020**

4. J. Moon and **T. Kang**

"Surface-Independent Antibody Immobilization via One-step Polydopamine/Protein G Coating: Application to Influenza Virus Immunoassay"

6th BioNano Health Guard Research Center Workshop, Maison Glad Jeju, Jeju, Korea, **Jun. 13 ~ 15, 2019**

5. H. Kim, and **T. Kang**

"Metal-Organic Framework coated Corrosion-resistant Silver Nanowire Surface-enhanced Raman Scattering Platform"

Nano Convergence Conference 2019, Elysian Gangchon, Chuncheon, Korea, **Jan. 17 ~ 18, 2019**

6. G. Eom, B. Kim, and **T. Kang**
"Au-sputtered Au Nanowire SERS Sensor for Telomerase Activity Detection"
2016 Fall Meeting of Materials Research Society of Korea, Hotel Hyundai
Gyeongju, Gyeongju, Korea, **Nov. 16 ~ 18, 2016**
7. A. Hwang, **T. Kang**, and B. Kim
"Well-oriented Antibodies on Ultraclean Single-crystalline Au Nanoplate for Attomolar
Detection of CRP"
2016 Fall Meeting of Materials Research Society of Korea, Hotel Hyundai
Gyeongju, Gyeongju, Korea, **Nov. 16 ~ 18, 2016**
8. W. S. Lee, **T. Kang**, and J. Jeong
"Detection of Influenza Virus using Inverse Opal Nanostructure-based Biosensor"
2016 Fall Meeting of Materials Research Society of Korea, Hotel Hyundai
Gyeongju, Gyeongju, Korea, **Nov. 16 ~ 18, 2016**
9. J. Moon and **T. Kang**
"Facile and sensitive identification of influenza viruses using SERS antibody probes"
2016 Fall Meeting of Materials Research Society of Korea, Hotel Hyundai
Gyeongju, Gyeongju, Korea, **Nov. 16 ~ 18, 2016**
10. J. Moon, S. Y. Yi, A. R. Hwang, G. Eom, J. Sim, B. H. Chung, B. Kim, J. Jung, and **T. Kang**
"Facile and sensitive identification of influenza viruses using SERS antibody probes"
Nano Convergence Conference 2016, Seoul National University, Seoul, Korea, **Jan. 21 ~ 22, 2016**
11. J. Moon, S. Y. Yi, A. R. Hwang, G. Eom, J. Sim, B. H. Chung, B. Kim, J. Jung, and **T. Kang**
"Facile and sensitive identification of influenza viruses using SERS antibody probes"
3rd BioNano Health Guard Research Center Workshop, Maison Glad Jeju, Jeju,
Korea, **Jan. 18 ~ 19, 2016**
12. G. Eom, **T. Kang**, and B. Kim
"Ultrasensitive detection of disease biomarker by Au nanoplate-Au nanoparticle platform"
115th Spring Meeting of the Korean Chemical Society, KINTEX, Ilsan, Korea, **Apr. 15 ~ 17, 2015**
13. G. Eom, H. Kim, and **T. Kang**, and B. Kim
"Highly sensitive assay for Telomerase Activity Detection on Au-sputtered Au Nanowire
SERS Platform"
2nd BioNano Health Guard Research Center Workshop, Jeju Grand Hotel, Jeju,
Korea, **Feb. 12 ~ 14, 2015**
14. G. Eom, H. Kim, and **T. Kang**, and B. Kim
"Au-Sputtered Au Nanowire SERS Platform for Telomerase Activity Detection"
114th Fall Meeting of the Korean Chemical Society, KIMDAEJUNG Convention
Center, Gwangju, Korea, **Oct. 15 ~ 17, 2014**

15. A. Hwang, H. Lee, M. Lee, E. Kim, **T. Kang**, and B. Kim
"SERS based Immunoassay using Single Crystalline Gold Nanoplate and Cysteine-tagged Protein G for Detection of C-reactive Protein (CRP)"
114th Fall Meeting of the Korean Chemical Society, KIMDAEJUNG Convention Center, Gwangju, Korea, **Oct. 15 ~ 17, 2014**
16. G. Eom, H. Kim, **T. Kang**, and B. Kim
"Ultrasensitive Detection of Telomerase Activity by Au-Sputtered Au Nanowire SERS Sensor"
2014 Fall Meeting of the Korean Society for Biotechnology and Bioengineering, Changwon Exhibition Convention Center, Changwon, Korea, **Oct. 5 ~ 7, 2014**
17. A. Hwang, H. Lee, **T. Kang**, and B. Kim
"Detection of C-reactive Protein (CRP) using Single Crystalline Gold Nanoplate and Cysteine-tagged Protein G based SERS Platform"
2014 Fall Meeting of the Korean Society for Biotechnology and Bioengineering, Changwon Exhibition Convention Center, Changwon, Korea, **Oct. 5 ~ 7, 2014**
18. J. Sim, M. Kong, **T. Kang**, S. Ryu, and B. H. Chung
"Specific Detection of *Bacillus cereus* by Surface Plasmon Resonance Using Phage Endolysin Cell Wall Binding Domains"
2014 Spring Meeting of the Korean Society for Biotechnology and Bioengineering, Hyundai Hotel, Gyeongju, Korea, **Apr. 9 ~ 11, 2014**
19. **T. Kang**
"Noble Metal Nanowires for Biomedical Applications"
Symposium of Division of Convergent BioMedical Research of KRIBB, KRIBB, Daejeon, Korea, **Dec. 20, 2012**
20. M. Kang, **T. Kang**, J. H. Kwak, and B. Kim
"Fabrication and Characterization of Single-Crystalline Au Nanowire Electrode"
107th Spring Meeting of the Korean Chemical Society, ICC, Jeju, Korea, **Apr. 28 ~ 29, 2011**
21. **T. Kang** and B. Kim
"Detection of Single Nucleotide Polymorphism by Au Nanowire-on-Film SERS Sensor Coupled with S1 Nuclease Treatment"
107th Spring Meeting of the Korean Chemical Society, ICC, Jeju, Korea, **Apr. 28 ~ 29, 2011**
22. Y. Yoo, **T. Kang**, and B. Kim
"Epitaxially-driven Stereoaligned Growth of Pt Nanowires from Oriented Seed Crystals"
107th Spring Meeting of the Korean Chemical Society, ICC, Jeju, Korea, **Apr. 28 ~ 29, 2011**
23. **T. Kang**, J. Ahn, I. Yoon, W. Choi, Q.-H. Park, and B. Kim
"Plasmonic Properties of Single Nanowire on a Film"
105th Spring Meeting of the Korean Chemical Society, Songdo Convensia, Incheon,

Korea, **Apr. 29 ~ 30, 2010**

24. **T. Kang**, S. M. Yoo, I. Yoon, S. Lee, J. Choo, S. Y. Lee, and B. Kim
"Ultrasensitive Single-Nanowire-on-Film SERS Sensor for Hg²⁺ Detection"
105th Spring Meeting of the Korean Chemical Society, Songdo Convensia, Incheon, Korea, **Apr. 29 ~ 30, 2010**
25. **T. Kang**, S. M. Yoo, I. Yoon, S. Y. Lee, and B. Kim
"Patterned Multiplex Pathogen DNA Detection by Au Particle-on-Wire SERS Sensor"
105th Spring Meeting of the Korean Chemical Society, Songdo Convensia, Incheon, Korea, **Apr. 29 ~ 30, 2010**
26. **T. Kang**, I. Yoon, J. Kim, H. Ihee, and B. Kim
"Au Nanowire-Au Nanoparticles Conjugated System Provides Micrometer Size Molecular Sensor"
104th Fall Meeting of the Korean Chemical Society, DCC, Daejeon, Korea, **Oct. 28 ~ 30, 2009**
27. **T. Kang**, I. Yoon, W. Choi, K.-S. Jeon, K. Seo, Y. Yoo, J. Kim, H. Ihee, Y. D. Suh, Q.-H. Park, and B. Kim
"Surface-enhanced Raman Scattering Sensor based on Noble Metal Nanostructures"
Summer Symposium of Division of Physical Chemistry of the Korean Chemical Society, Haeundae Grand Hotel, Busan, Korea, **Oct. 28 ~ 30, 2009**
28. **T. Kang**, I. Yoon, K.-S. Jeon, W. Choi, Y. Lee, K. Seo, Y. Yoo, Q.-H. Park, H. Ihee, Y. D. Suh, and B. Kim
"Creating Well-Defined Hot Spots for Surface-enhanced Raman Scattering by Single-Crystalline Noble Metal Nanowire Pairs"
103th Spring Meeting of the Korean Chemical Society, COEX, Seoul, Korea, **Apr. 16 ~ 17, 2009**
29. I. Yoon, **T. Kang**, J. Kim, H. Ihee, and B. Kim
"Single Nanowire on a Film as an Efficient SERS-Active Platform"
103th Spring Meeting of the Korean Chemical Society, COEX, Seoul, Korea, **Apr. 16 ~ 17, 2009**
30. **T. Kang**, P. Mohanty, I. Yoon, K. Seo, K. S. K. Varadwaj, W. Choi, Q.-H. Park, J. P. Ahn, Y. D. Suh, H. Ihee, and B. Kim
"Simple Vapor Phase Synthesis of Single-crystalline Ag NWs and Single NW Surface-enhanced Raman Scattering"
2007 BK Student Symposium, KAIST, Daejeon, Korea, **Dec. 17, 2007**
31. **T. Kang**, I. Yoon, and B. Kim
"Surface-enhanced Raman Scattering of Individual Metallic Nanostructures"
99th Spring Meeting of the Korean Chemical Society, COEX, Seoul, Korea, **Apr. 19 ~ 20, 2007**
32. **T. Kang**, J. Sung, and B. Kim

"Synthesis and Characterization of ZnS Nanostructures and its doping"

96th Fall Meeting of the Korean Chemical Society, Yonsei University, Wonju, Korea,
Oct. 21 ~ 22, 2005

33. **T. Kang**, J. Sung, and B. Kim

"Synthesis and Characterization of ZnS Nanostructures and its doping"

Summer Symposium of Division of Physical Chemistry of the Korean Chemical Society, Deogyusan Resort, Muju, Korea, **Jul. 4 ~ 5, 2005**

34. **T. Kang** and B. Kim

"Fabrication of Nanodevices using Optical Microscope"

2nd ABRL Workshop, Arpina Youth Hostel, Busan, Korea, **Aug. 17 ~ 18, 2004**

Teaching Experience

Lecturer

1. 2021. 9 ~ 2021. 12 **Bioanalytical Technology**
Department of Biological Sciences, KAIST
2. 2020. 9 ~ 2020. 12 **Bioanalytical Technology**
Department of Biological Sciences, KAIST
3. 2020. 8. 27 **Education on the ICT Convergence in Vitro Diagnosis**
Division of Nano-Bio Sensors/Chips Development, NNF
4. 2020. 5. 21 **Nanomaterials**
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST
5. 2019. 9 ~ 2019. 12 **Bioanalytical Technology**
Department of Biological Sciences, KAIST
6. 2018. 9 ~ 2018. 12 **Bioanalytical Technology**
Department of Biological Sciences, KAIST
7. 2018. 3 ~ 2018. 6 **Nanomaterials**
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST
8. 2017. 9 ~ 2017. 12 **Bioanalytical Technology**
Department of Biological Sciences, KAIST
9. 2016. 9 ~ 2016. 12 **Laboratory Research on the Synthesis and Application of Nanomaterials**
Major of Nanobiotechnology and Bioinformatics, UST
10. 2016. 3. 31 **Nanobiotechnology**
Department of Chemistry, Catholic University of Korea
11. 2014. 12. 17 **Nanobiotechnology**

Department of Chemistry, Chungnam National University

Graduate Student Committee

1. *Yong Ju, Ph.D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemical & Biomolecular Engineering,
KAIST, May 24, 2022
Ph. D. Preliminary Examination Committee Member
Department of Chemical & Biomolecular Engineering,
KAIST, May 24, 2021
2. *Jeong Moon Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemical & Biomolecular Engineering,
KAIST, Dec. 6, 2021
Ph. D. Preliminary Examination Committee Member
Department of Chemical & Biomolecular Engineering,
KAIST, May 24, 2021
3. *Seo Young Lee Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemical & Biomolecular Engineering,
KAIST, Dec. 6, 2021
Ph. D. Preliminary Examination Committee Member
Department of Chemical & Biomolecular Engineering,
KAIST, May 24, 2021
4. *Yeonkyung Park Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemical & Biomolecular Engineering,
KAIST, Dec. 6, 2021
Ph. D. Preliminary Examination Committee Member
Department of Chemical & Biomolecular Engineering,
KAIST, May 24, 2021
5. *Hansol Kim Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemical & Biomolecular Engineering,
KAIST, Dec. 6, 2021
Ph. D. Preliminary Examination Committee Member
Department of Chemical & Biomolecular Engineering,
KAIST, May 24, 2021
6. *Seul-Gee Hwang, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST, Nov. 25, 2019
Ph. D. Preliminary Examination Committee Member
Major of Nanobiotechnology, KRIBB School, UST,
Mar. 29, 2017
7. *Wang Sik Lee, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Nanobiotechnology,

- KRIBB School of Biotechnology, UST, Nov. 21, 2019
Ph. D. Preliminary Examination Committee Member
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST, Apr. 2, 2018
8. *Narae Cho, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST, Nov. 21, 2019
Ph. D. Preliminary Examination Committee Member
Major of Nanobiotechnology, KRIBB School, UST,
Mar. 14, 2017
9. *Eungwang Kim, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, May 21, 2019
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, Nov. 28, 2014
10. *Si Yeong Yang, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, Nov. 21, 2018
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, Nov. 20, 2015
11. *Mi Yeon Lee, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, May 31, 2018
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, Nov. 20, 2015
12. *Ah Reum Hwang, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, Nov. 20, 2017
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, May 20, 2014
13. *Gayoung Eom, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, Nov. 20, 2017
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, Nov. 26, 2013
14. *Hongki Kim, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, May 16, 2017
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, Jun. 11, 2013
15. *Raekeun Gwak, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, Nov. 15, 2016
Ph. D. Preliminary Examination Committee Member
Department of Chemistry, KAIST, Dec. 6, 2012

16. *Kyeonghye Guk, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST, Nov. 25, 2019
17. *Si-in Kim, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, May 20, 2014
18. *Hyoban Lee, Ph. D.* **Ph. D. Thesis Examination Committee Member**
Department of Chemistry, KAIST, Nov. 22, 2013
19. *Byoung-Hoon Kang* **Ph.D. Preliminary Examination Committee Member**
Department of Bio and Brain Engineering,
KAIST, Jun. 27, 2022
20. *Hyunju Kang* **Ph. D. Preliminary Examination Committee Member**
Department of Chemistry, KAIST, Jun. 7, 2022
21. *Younseong Song* **Ph. D. Preliminary Examination Committee Member**
Department of Chemical & Biomolecular Engineering,
KAIST, Feb. 23, 2022
22. *Jaewoo Lim* **Ph. D. Preliminary Examination Committee Member**
Department of Nanobiotechnology,
KRIBB School of Biotechnology, UST, Jun. 26, 2018
23. *Dung Tran* **Ph. D. Preliminary Examination Committee Member**
Major of Nanobiotechnology and Bioinformatics, UST,
Sep. 23, 2016
24. *Jiyoung Lee* **Ph. D. Preliminary Examination Committee Member**
Department of Chemistry, KAIST, Nov. 28, 2014
25. *Yujeong Kim* **M. S. Thesis Examination Committee Member**
Major of Nanobiotechnology and Bioinformatics, UST,
Nov. 21, 2016

Teaching Assistant

1. 2010. 3 ~ 2010. 10 **High school Research Program (Laboratory)**
Department of Chemistry, KAIST
2. 2010. 2 ~ 2010. 5 **Undergraduate Research Program (Laboratory)**
Department of Chemistry, KAIST
3. 2009. 2 ~ 2009. 5 **Undergraduate Research Program (Laboratory)**
Department of Chemistry, KAIST
4. 2008. 9 ~ 2008. 12 **Molecular Spectroscopy (Theory)**
Department of Chemistry, KAIST
5. 2008. 2 ~ 2008. 5 **Nano Science (Theory)**

Interdisciplinary Program for Nano Science and Technology,
KAIST

6. 2006. 3 ~ 2006. 6

Physical Chemistry Experiment (Laboratory)

Department of Chemistry, KAIST