

Ju Ye Kim, Ph.D.

Postdoctoral Researcher Brown University School of Engineering 184 Hope St, Providence, RI 02912, USA	Phone: +1 401 678 0093 E-mail: juye_kim@brown.edu juyekim0122@gmail.com https://www.linkedin.com/in/juyekim0122/ ORCID ID : https://orcid.org/0000-0003-4262-0569
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EDUCATION

2020	Ph.D. Department of Chemical and Biomolecular Engineering Korea Advanced Institute of Science & Technology (KAIST), Korea PI: Prof. Hee-Tae Jung Dissertation title: Development of highly efficient electrochemical catalyst by nano- and atomic-scale surface structure control
2014	B.S. Department of Chemical Engineering SungKyunKwan University (SKKU), Korea

PROFESSIONAL EMPLOYMENT

Sep. 2025	Assistant Professor (Scheduled appointment) Oregon State University, United States School of Chemical, Biological, and Environmental Engineering (CBEE)
Jan. 2022 – Aug. 2025	Postdoctoral Researcher Brown University, United States PI: Prof. Andrew A. Peterson (Catalyst design lab), <i>Dry experiment</i> -Machine learning-assisted calculations of electrocatalytic systems (DFT , AMP , SJM , ASE , GPAW , Python language, computational works in grand canonical system)
Sep. 2020 – Dec. 2021	Postdoctoral Researcher Korea Research Institute of Chemical Technology (KRICT), Korea PI: Dr. Hyung Ju Kim (Electrocatalysis Lab), <i>Wet experiment</i> -Biomass conversion (glycerol oxidation) (GOR), Hydrogen evolution reaction (HER)
Mar. 2020 – Sep. 2020	Postdoctoral Researcher Korea Advanced Institute of Science and Technology (KAIST), Korea PI: Prof. Hee-Tae Jung (Organic Opto-Electronic Materials Lab), <i>Wet experiment</i> -CO ₂ electro-reduction (CRR), Li-metal battery
Aug. 2016 – Mar. 2017	Visiting Research Scholar (sponsored by a research fellowship of BK21 Plus Program) Brown University, United States PI: Prof. Andrew A. Peterson (Catalyst design lab), <i>Wet experiment</i> -Hydrogen evolution reaction (HER)

HONORS, AWARDS, AND FELLOWSHIPS

Sep. 2024	<i>Best Poster Award</i> , Subra Suresh Symposium at the Frontiers of Technology and Society, Brown University
Mar. 2020	Global Research Travel Grants for Women Ph.D. Scientists in Korea, WiSET
May. 2019	<i>Best Oral Presentation Award</i> , Graduate Symposium, Department of Chemical and

- Biomolecular Engineering, KAIST
- Oct. 2018 *Best Oral Presentation Award*, The Korean Institute of Chemical Engineers Fall Symposium 2018
- Oct. 2018 *Grand Prize*, Female Engineering Graduate Student Team, The Korean Institute of Chemical Engineers Fall Symposium 2018
- Jul. 2018 *Best Poster Award*, The 16th International Nanotech Symposium, Korea
- June. 2018 Undergraduate Research Participation Program (URP) Fellowship, KAIST, Project number: N11180207
- Dec. 2018
- April. 2018 Engineering Research Team Project Grant, Korean-American Women in Science and Engineering (WiSET), Project number: N01180598
- Oct. 2018
- Aug. 2016 International Research Scholarship, Brain Korea 21 Plus (BK21+) Program, Korea
- Aug. 2016 *Best TA Award* by student and faculty vote, Department of Chemical and Biomolecular Engineering, KAIST
- Apr. 2016 *Best Poster Award*, Graduate Symposium, Department of Chemical and Biomolecular Engineering, KAIST
- 2014 – 2020 Korean Government Scholarship, KAIST
- 2010 – 2014 National Science & Technology Scholarship, Ministry of Education, Science and Technology, Korea

PUBLICATIONS

JOURNAL ARTICLES

[†] Denotes co-first authorship; * Denotes corresponding author

22. Huanqin Guan, **Ju Ye Kim**, Kecheng Wei, Mayank Agrawal, and Andrew A. Peterson*, and Shouheng Sun*, “Nanoparticle-Enabled Integration of Direct Air Capture and Conversion of CO₂.”, *Nanoscale*, **2024**, in press [[Link](#)]
21. **Ju Ye Kim**[†], Oh B. Chae[†], Gukbo Kim[†], Andrew A. Peterson, Mihye Wu*, and Hee-Tae Jung*, “Long-range Uniform Deposition of Ag Nanoseed on Cu Current Collector for High-performance Lithium Metal Batteries.”, *Small*, **2024**, 20, 24, 2307200 [[Link](#)]
20. **Ju Ye Kim**[†], Oh B. Chae[†], Gukbo Kim, Woo-Bin Jung, Sungho Choi, Do Youb Kim, San Moon, Jungdon Suk, Yongku Kang, Mihye Wu*, and Hee-Tae Jung*, “Spatial Control of Lithium Deposition by Controlling the Lithiophilicity with Copper(I) Oxide Boundaries.”, *Energy Environ. Mater.*, **2023**, 6, e12392 [[Link](#)]
19. Jinkwan Jung[†], **Ju Ye Kim**[†], Il Ju Kim, Hyeokjin Kwon, Gukbo Kim, Gisu Doo, Wonhee Jo, Hee-Tae Jung*, and Hee-Tak Kim*, “Insights on the work function of the current collector surface in anode-free lithium metal batteries.”, *J. Mater. Chem. A*, **2022**, 10, 20984-20992 [[Link](#)]
18. Daewon Lee[†], **Ju Ye Kim**[†], Lee Seul Oh[†], Hyun Woo Kim, Youngmin Kim, Wongeun Yoon, Eunho Lim, Won Bae Kim, Jong Hyeok Park, and Hyung Ju Kim*, “Revealing improved electrocatalytic performances of electrochemically synthesized S and Ni doped Fe₂O₃ nanostructure interfaces.”, *Appl. Surf. Sci.*, **2022**, 588, 152894 [[Link](#)]
17. **Ju Ye Kim**, Gukbo Kim, Hyeonsik Won, Issam Gereige, Woo-Bin Jung*, and Hee-Tae Jung*, “Synergistic Effect of Cu₂O Mesh Pattern on High-Facet Cu Surface for Selective CO₂ Electroreduction to Ethanol.”, *Adv. Mater.*, **2021**, 34, 2106028 (1-10) [[Link](#)]
16. Woo-Bin Jung[†], Oh B. Chae[†], Minki Kim[†], Yesol Kim, Yu Jin Hong, **Ju Ye Kim**, Sungho Choi, Do Youb Kim, San Moon, Jungdon Suk, Yongku Kang, Mihye Wu*, and Hee-Tae Jung*, “Effect of Highly Periodic Au Nanopatterns on Dendrite Suppression in Lithium Metal Batteries.”, *ACS Appl. Mater. Interfaces*, **2021**, 13, 60978-60986 [[Link](#)]

15. Oh B. Chae, Mihye Wu, Jeong Beom Lee, Jihyun Jang, Jongjung Kim, **Ju Ye Kim**, Woo-Bin Jung, Seunghye Lee, Ji Heon Ryu*, and Seung M. Oh*, “A comparative study of increased lithium storage with low resistance at structural defects in amorphous titanium dioxide electrode.”, *Electrochim. Acta.*, **2021**, 398, 139358 [\[Link\]](#)
14. Lee Seul Oh, **Ju Ye Kim**, Hyun Woo Kim, Jeong Hyun Han, Eunho Lim, Won Bae Kim, Jong Hyuk Park, and Hyung Ju Kim*, “Unveiling the enhanced electrocatalytic activity at electrochemically synthesized Pt-WO_x hybrid nanostructure interfaces.”, *Chem. Commun.*, **2021**, 57, 11165-11168 [\[Link\]](#)
13. Chansol Kim, Kyeong Min Cho*, Kangho Park, **Ju Ye Kim**, Geun-Tae Yun, Francesca M. Toma, Issam Gereige, and Hee-Tae Jung*, “Cu/Cu₂O Interconnected Porous Aerogel Catalyst for Highly Productive Electrosynthesis of Ethanol from CO₂.”, *Adv. Funct. Mater.*, **2021**, 31, 2102142 (1-9) [\[Link\]](#)
12. **Ju Ye Kim**, Per Lindgren, Yin-Jia Zhang, Seok Ki Kim, Thomas M. Valentin, Hee-tae Jung, and Andrew A. Peterson*, “Sulfur promotes hydrogen evolution on molybdenum carbide catalysts.”, *Mater. Adv.*, **2021**, 2, 4867-4875 [\[Link\]](#)
11. **Ju Ye Kim**, Woonghyeon Park, Changhyeok Choi, Gukbo Kim, Kyeong Min Cho, Jinkyu Lim, Seon Joon Kim, Ahmed Al-Saggaf, Issam Gereige, Hyunjoo Lee, Woo-Bin Jung*, Yousung Jung*, and Hee-Tae Jung*, “High Facets on Nanowrinkled Cu via Chemical Vapor Deposition Graphene Growth for Efficient CO₂ Reduction into Ethanol.”, *ACS Catal.*, **2021**, 11, 5658-5665 [\[Link\]](#)
10. **Ju Ye Kim**[†], Oh B. Chae[†], Mihye Wu*, Eunsoo Lim, Gukbo Kim, Yu Jin Hong, Woo-Bin Jung, Sungho Choi, Do Youb Kim, Issam Gereige, Jungdon Suk, Yongku Kang, and Hee-Tae Jung*, “Extraordinary dendrite-free Li deposition on highly uniform facet wrinkled Cu substrates in carbonate electrolytes.”, *Nano Energy*, **2021**, 82, 105736 [\[Link\]](#)
9. Woo-Bin Jung, Hyunsoo Park, Ji-Soo Jang, Do Youb Kim, Dong Wook Kim, Eunsoo Lim, **Ju Ye Kim**, Sungho Choi, Jungdon Suk, Yongku Kang, Il-Doo Kim, Jihan Kim, Mihye Wu*, and Hee-Tae Jung*, “Polyelemental Nanoparticles as Catalysts for a Li–O₂ Battery.”, *ACS Nano*, **2021**, 15, 4235-4244 [\[Link\]](#)
8. Keon Hee Park, Do Youb Kim, **Ju Ye Kim**, Minki Kim, Geun-Tae Yun, Yesol Kim, Heeun Joo, Sungho Choi, Jungdon Suk, Yongku Kang, Mihye Wu*, Woo-Bin Jung*, and Hee-Tae Jung*, “Fabrication of Highly Monodisperse and Small-Grain Platinum Hole–Cylinder Nanoparticles as a Cathode Catalyst for Li–O₂ Batteries.”, *ACS Appl. Energy Mater.*, **2021**, 4, 2514-2521 [\[Link\]](#)
7. Mihye Wu[†], **Ju Ye Kim**[†], Oh B. Chae*, Woo-Bin Jung, Sungho Choi, Do Youb Kim, Jungdon Suk, Issam Gereige, Yongku Kang*, and Hee-Tae Jung*, “Nanoscale Wrinkled Cu as a Current Collector for High-Loading Graphite Anode in Solid-State Lithium Batteries.”, *ACS Appl. Mater. Interfaces*, **2021**, 13, 2576-2583 [\[Link\]](#)
6. Kyeong Min Cho[†], Woo-Bin Jung[†], Donggyu Kim, **Ju Ye Kim**, Yesol Kim, Geun-Tae Yun, Seunghwa Ryu, Ahmed Al-Saggaf, Issam Gereige, and Hee-Tae Jung*, “Confined cavity on a mass-producible wrinkle film promotes selective CO₂ reduction.”, *J. Mater. Chem. A*, **2020**, 8, 14592-14599 [\[Link\]](#)
5. Mihye Wu[†], **Ju Ye Kim**[†], Hyunsoo Park[†], Do Youb Kim, Kyeong Min Cho, Eunsoo Lim, Oh B. Chae, Sungho Choi, Yongku Kang*, Jihan Kim*, and Hee-Tae Jung*, “Understanding Reaction Pathways in High Dielectric Electrolytes Using β-Mo₂C as a Catalyst for Li-CO₂ batteries.”, *ACS Appl. Mater. Interfaces*, **2020**, 12, 32633-32641 [\[Link\]](#)
4. Mihye Wu, Do Youb Kim, Hyunsoo Park, Kyeong Min Cho, **Ju Ye Kim**, Seon Joon Kim, Sungho Choi, Yongku Kang, Jihan Kim*, and Hee-Tae Jung*, “Formation of toroidal Li₂O₂ in non-aqueous Li-O₂ batteries with Mo₂CT_x MXene/CNT composite.”, *RSC Adv.*, **2019**, 9, 41120-41125 [\[Link\]](#)
3. **Ju Ye Kim**[†], Soo-Yeon Cho[†], and Hee-Tae Jung*, “Selective Functionalization of High-Resolution Cu₂O Nanopatterns via Galvanic Replacement for Highly Enhanced Gas Sensing Performance.”, *Sensors*, **2018**, 18, 4438 [\[Link\]](#)
2. Soo-Yeon Cho[†], **Ju Ye Kim**[†], Ohmin Kwon, Jihan Kim, and Hee-Tae Jung*, “Molybdenum carbide chemical sensors with ultrahigh signal-to-noise ratios and ambient stability.”, *J. Mater. Chem. A*, **2018**, 6, 23408-23416 [\[Link\]](#)
1. Soo-Yeon Cho, Hae-Wook Yoo, **Ju Ye Kim**, Woo-Bin Jung, Ming Liang Jin, Jong-Seon Kim, Hwan-Jin

Jeon, and Hee-Tae Jung*, “High-Resolution p-Type Metal Oxide Semiconductor Nanowire Array as an Ultrasensitive Sensor for Volatile Organic Compounds.”, *Nano Lett.*, **2016**, 16, 4508-4515 [[Link](#)]

WORKING PAPERS

7. Sukhwa Hong[†], Sang-Mun Jung[†], **Ju Ye Kim**[†], Andrew A. Peterson*, and Yong-Tae Kim*, “Active Change of Co-Fe Spinel Oxide by Ru doping for High efficient Oxygen Evolution Reaction.” (*ongoing*)
6. **Ju Ye Kim**, Gukbo Kim, and Hee-Tae Jung*, “Efficient catalytic activity of [110] facet oriented oxide-derived Cu for CO₂ reduction.” (*in preparation*)
5. **Ju Ye Kim**, Gukbo Kim, Hong Seok Yang, and Hee-Tae Jung*, “100 oriented nanowrinkled Cu film for high ethylene selectivity from CO₂ electro-reduction.” (*ongoing*)
4. **Ju Ye Kim**, Xi Chen, and Andrew A. Peterson*, “Understanding the Charge Transfer at Electrode-Electrolyte Interface during the Proton Transfer in Grand Canonical Electrochemical System.” (*to be submitted*)
3. **Ju Ye Kim**[†], Won Moo Lee[†], Andrew A. Peterson*, Mihye Wu*, and Hee-Tae Jung*, “Preferential lithium deposition on engraved Cu nanodimple structures by block copolymer nanolithography.” (*to be submitted*)
2. Yu Jin Kang[†], **Ju Ye Kim**[†], Yu Jin Hong, Da Eun Han, Hyo Won Bae, Dong Wook Kim, Do Youb Kim, Se Hee Kim, San Moon, Jungdon Suk, Kyu Hyoung Lee, Andrew A. Peterson*, and Mihye Wu*, “Carbon doped C₃N₄ for enhancing the electrolyte conductivity for solid-state battery.” (*to be submitted*)
1. **Ju Ye Kim**, Lee Seul Oh, Kyoung Soo Kim*, and Hyung Ju Kim*, “Bronsted Acid Site effects on Biomass-Derived Glycerol Electro-oxidation for High Electrocatalytic Activity" (*to be submitted*)

PATENTS

4. Complex Material, Fabrication Method of the Same and Electrocatalyst including the Same, Hyung Ju Kim, Eunho Lim, **Ju Ye Kim**, Leeseul Oh, Patent application number: 10-2021-0110838 (Korea)
3. A Current Collector for Lithium Metal Battery for Inhibiting Growth of Dendritic Lithium and Manufacturing Method Thereof, Hee-Tae Jung, Jung Don Suk, Mihye Wu, **Ju Ye Kim**, San Moon, Yu Jin Hong, Gukbo Kim, Patent application number: 10-2021-0186276 (Korea)
2. Current Collector for All-Solid-State Lithium Battery and Manufacturing Method Thereof, Hee-Tae Jung, Jung Don Suk, Mihye Wu, Yongku Kang, Do Youb Kim, **Ju Ye Kim**, Sung Ho Choi, Patent application number: 10-2021-0186281 (Korea)
1. Method of Preparing Cu Nanowrinkle Structure by Using Chemical Vapor Deposition (CVD) Graphene-Growth Process, Hee-Tae Jung, **Ju Ye Kim**, Woo-Bin Jung, Patent application number: 10-2021-0026265, Patent registration number: 10-2473602 (Korea)

GRANTS

- 2024 **Basic Science Research Program for Overseas Postdoctoral Researchers**
Title: Revealing the electrochemical proton transfer pathway and relevant kinetics on electrode-electrolyte interfaces through grand canonical calculations assisted by machine learning in a charged system
National Research Foundation of Korea (NRF), the Korean Ministry of Education
Role: Principal Investigator
Funding: 60,000,000 Korean Won (Approx. \$46,000 USD)
- 2020 **Basic Science Research Program for Domestic Postdoctoral Researchers**
Title: Development of large-area copper film electrocatalysts with controlled nano-surface crystals and structures for electrochemical reduction of carbon dioxide
National Research Foundation of Korea (NRF), the Korean Ministry of Education
Role: Principal Investigator

Funding: 45,000,000 Korean Won (Approx. \$34,600 USD)
 (*Award withdrawn due to the affiliation change)

2020 **KAIST Global Center for Open Research with Enterprise for Postdoc at KAIST**
Title: Development of nanostructured current collector of lithium metal battery controlled by uniform surface crystal for dendrite-free Li deposition
 Korea Advanced Institute of Science & Technology (KAIST)
 Role: Principal Investigator
 Funding: 76,000,000 Korean won (Approx. \$ 58,500 USD)
 (*Award withdrawn due to the affiliation change)

RESEARCH SKILLS & EXPERTISE

Synthesis	Nanopatterning (line, dot pattern using mask), Dry and wet etching (ion milling, RIE) Thin film deposition and coating: CVD, e-beam evaporator, thermal deposition, and transfer skills (PMMA-assisted floating method), Synthesis: Graphene, TMD, Mo ₂ C, and nanoparticle, Thermal reduction, Electrodeposition, Galvanic replacement
Analysis	SEM, TEM, AFM, POM, EDS, XPS, XRD, Raman spectroscopy, FIB, EBSD, ICP-AES, NMR, GC, HPLC, IC (all self-user)
Electrochemical	Basic experiment and analysis skills using potentiostat (CV, CVA, CA, EIS, etc.) CO ₂ electro-reduction reaction system, reactor design (H-type, sandwiched cell) CO ₂ reduction/glycerol oxidation system reactor design (sandwiched cell)
Modeling	DFT (language: Python), Grand canonical simulation, Machine-learning, NEB, CI, Bader analysis, etc.

TEACHING EXPERIENCE

2023, Fall	[Teaching Certificate] Sheridan Teaching Program, Brown Teaching Certificate
2017, Spring	[Class, CBE 351] Introduction to Polymer Science & Engineering for undergraduate students, TA, Q&A
2016, Spring	[Class, CBE 301] Chemical and Biomolecular Engineering Laboratory for undergraduate students, Best TA awarded, Instructor [in English], evaluation
2015, Fall	[Class, CBE 201] Molecular Engineering Laboratory for undergraduate students, Instructor [in English], evaluation
2015, Spring	[Class, CBE 351] Introduction to Polymer Science & Engineering for undergraduate students, TA, Q&A
2014, Fall	[Class, CBE 496 & CBE 966] Seminar for undergraduate & graduate students, Instructor , Presentation schedule managing

MENTORING

2023 ~	Qiyue Luo, M.S. course, Brown
2022	Kavya Malhotra, Undergrad, SPRINT Project, Brown
2021–2022	Lee Seul Oh, Ph.D. course, Yonsei University & KRICT <ul style="list-style-type: none"> • 1 patent and 3 paper co-authorship (2 published, 1 in preparation)
2021–2022	Jeonghyun Han, visiting Ph.D. course, PostTech & KRICT
2018 ~	Gukbo Kim, Undergrad & M.S. & Ph.D. course, KAIST <ul style="list-style-type: none"> • M.S. & Ph.D. (2020. Spring – current) • Undergraduate Thesis Research Credit (2019. Winter) – 3 credit • Undergraduate Research Participation Program (URP, 2019. Summer & Fall)

- Undergraduate Individual Research Credit (2018. Winter & 2019. Spring) – 1 credit
 - 1 patent and 7 paper co-authorship (5 published, 2 in preparation)
- 2019–2023 Wonmoo Lee, Ph.D. course, KAIST
- 1 co-authorship (1 to be submitted)
- 2019, fall Soyeon Yun, Undergrad, PostTech, Undergraduate Research Exchange Credit – 1 credit
- 2019 Hyeonsik Won, Undergrad, KAIST
- Undergraduate Thesis Research Credit (2019. Winter) – 3 credit
 - 1 paper co-authorship (published)
- 2018 Hong Seok Yang, Undergrad, KAIST
- Undergraduate Thesis Research Credit (2018. Spring) – 3 credit
 - Undergraduate Research Participation Program (URP, 2018. Summer & Fall)
 - 1 paper co-authorship (1 in preparation)
- 2018 Je Yang and Minji Bang, WiSET Program, Undergrad, KAIST
- 2018 Sehee Jung, Yewon Jang, and Minsuh Kim, WiSET Program, Daejeon Science High School

OUTREACH PROGRAM

- 2024 Proposal Development Workshop sponsored by The offices of the Vice President for Research, Division of Biology and Medicine, School of Public Health, Advance RI-CTR and Providence/Boston Center for AIDS Research (Participant)
- 2023 Rising Star for Women Leadership Workshop operated by AIChE (Participant)
- 2023 Applied **DEI** Strategies, Brown (Acquired **Certification**)
- 2023 Sheridan **Teaching** Program, Brown (Acquired **Certification**)
- 2023 A Global Cross-mentoring Program sponsored by WiSET (Mentee)
- 2023 Sheridan Center's Creating a Teaching Portfolio Online workshop, Brown (Participant)
- 2022 CAMD Summer School 2022 organized by DTU (Participant)
- 2018 Women Engineering Research Team sponsored by WiSET (Team Leader)
- 2012 BioMEMS laboratory Internship at Gwangju Institute of Science and Technology (GIST)

PROFESSIONAL MEMBERSHIP

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|-----------|---|--------|
| 2024 ~ | American Institute of Chemical Engineers (AIChE) | Member |
| 2024 ~ | The Electrochemical Society (ECS) | Member |
| 2023 ~ | Korean-American Women in Science and Engineering (KWise) | Member |
| 2023 ~ | Korean-American Scientists and Engineers Association (KSEA) | Member |
| 2014–2020 | The Korean Institute of Chemical Engineers | Member |
| 2014–2020 | The Korean Electrochemical Society | Member |
| 2014–2020 | The Polymer Society of Korea | Member |

CONFERENCE PRESENTATIONS

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| 2024 | 2024 American Institute of Chemical Engineers (AIChE) Annual Meeting | Oral |
| 2024 | The Electrochemical Society (ECS) 245 th Meeting | Poster |
| 2024 | Gordon Research Conference 2024 Electrochemistry | Poster |
| 2024 | Gordon Research Seminar 2024 Electrochemistry | Poster |
| 2022 | High Facets on Nanowrinkled Cu via Chemical Vapor Deposition Graphene Growth for CO ₂ , Reduction, New England Catalysis Society 2022 | Oral |
| 2019 | Solar-driven CO ₂ electro-conversion by using nanostructured Cu film, European Materials Research Society (eMRS) Spring meeting 2019 | Poster |
| 2018 | Step-dominated Cu electrocatalyst for CO ₂ conversion with high selectivity of C ₂ products, | Poster |

- Nano Korea 2018 (The 16th International Nanotech Symposium & Nano-Convergence Expo),
Best Poster Award
- 2017 Metal wrinkle structure for highly selective electrocatalytic reduction of carbon dioxide, The 15th International Conference on Carbon Dioxide Utilization 2017 Poster
- 2015 Study about gas sensing performance with Pt decorated CuO sensor via galvanic replacement focusing on catalytic effect, Nano Korea 2015 (The 13th International Nanotech Symposium & Nano-Convergence Expo) Poster
- 2015 Catalytic effect of gas sensing performance using CuO thin line channel decorated by Pt via galvanic replacement, The 28th International Symposium on Chemical Engineering Poster