

DABIN YIM (Ph.D.)

Department of Chemical and Biomolecular Engineering

University of California, Berkeley

United States

dabinyim@berkeley.edu

E-mail dabinyim@naver.com

Education & Experience:

- 02/2022 – Present **Postdoctoral Associate** (Advisor: Prof. Markita P. Landry)
Department of Chemical and Biomolecular Engineering
UC Berkeley, CA, U.S.
- 03/2021 – 01/2022 **Postdoctoral Associate** (Advisor: Prof. Jong-Ho Kim)
Department of Materials Sciences & Chemical Engineering
Hanyang University (ERICA), Ansan, Republic of Korea
- 03/2014 - 02/2021 **Integrated M.S. & Ph.D.** (Advisor: Prof. Jong-Ho Kim)
School of Fusion Chemical Engineering, Hanyang University, Seoul,
Republic of Korea
Thesis: Biocompatible transition metal dichalcogenides nanosheets for
treatment of inflammatory diseases *via* scavenging ROS and RNS
- 03/2010 - 02/2014 **B.S.**
Department of Chemical Engineering,
Hanyang University, Ansan, Republic of Korea

Projects:

- 07/2021 – 01/2022 **Postdoctoral Associate**
'Basic Research Laboratory for NLRP3 inflammatory Immunotherapy'
supported by National Research Foundation of Korea
- 03/2015 - 02/2020 **Student Researcher**
'Nano chemical process-based new functional human resource
training, Brain Korea 21 Plus' supported by National Research
Foundation of Korea.

05/2015 - 04/2017

Student Researcher

‘Development of Antioxidative Electronic Skin’ supported by Amorepacific Corporation

Research Interests:

- Organic-inorganic hybrid nanomaterials for sensing and therapy
- Nanosensors for the detection of ROS, RNS, and proteins
- Carbon nanomaterials for the antioxidant therapy of inflammatory diseases
- Inorganic nanosheet-based nanohybrids for immunotherapy
- Heterogeneous photocatalysts for energy applications

Publications:

1. Yoonhee So*, **DaBin Yim***, Wooic Son, Hyun-Ji Lee, Sin Lee, Chanhee Choi, Chul-Su Yang, and Jong-Ho Kim, ‘Oxidative Stress-Suppressive WS₂ Nanosheet Antipyrotics Enhancing Cellular Defense Mechanisms for the Treatment of Deep Burn Wounds’, **2022**, March, *Submitted* *These authors contributed equally to this work.
2. Sin Lee, Tae Woog Kang, In-Jun Hwang, Hye-In Kim, Su-Ji Jeon, **DaBin Yim**, Chanhee Choi, Wooic Son, Hyunsung Kim, Chul-Su Yang, Hwankyu Lee*, and Jong-Ho Kim*, ‘Transition Metal Dichalcogenide Artificial Antibodies with Multivalent Polymeric Recognition Phases for Rapid Detection and Inactivation of Pathogens’, *Journal of the American Chemical Society*, **2021**, 143, 14635-14645
3. **DaBin Yim**, Da-Eun Lee, Yoonhee So, Chanhee Choi, Kiseok Jang, Chul-Su Yang, and Jong-Ho Kim, ‘Sustainable Nanosheet Antioxidants for Sepsis Therapy via Scavenging Intracellular Reactive Oxygen and Nitrogen Species’, *ACS Nano*, **2020**, 14, 10324-10336
4. Jinsol Im, Eun Kwang Jang, **DaBin Yim**, Jong-Ho Kim, and Kuk Young Cho, ‘One-pot fabrication of uniform half-moon-shaped biodegradable microparticles via microfluidic approach’, *Journal of Industrial and Engineering Chemistry*, **2020**, 90, 152-158
5. Hye-In Kim, **DaBin Yim**, Su-Ji Jeon, Tae Woog Kang, In-Jun Hwang, Sin Lee, Jin-Kyoung Yang, Jong-Min Ju, Yoonhee So, and Jong-Ho Kim, ‘Modulation of Oligonucleotide-Binding Dynamics on WS₂ Nanosheet Interfaces for Detection of Alzheimer’s Disease Biomarkers’, *Biosensors and Bioelectronics*, **2020**, 165, 112401
6. Jun-Hyeong Lee*, **DaBin Yim***, Jung Hyun Park*, Chi Ho Lee, Jong-Min Ju, Sang Uck Lee, and Jong-Ho Kim, ‘Tuning *d*-Band Centers by Coupling PdO nanoclusters to WO₃ Nanosheets to Promote the Oxygen Reduction Reaction’, *Journal of Materials Chemistry*

A, **2020**, 8, 13490-13500. ***These authors contributed equally to this work.**

7. Jung Hyun Park, Chi Ho Lee, Jong-Min Ju, Jun-Hyeong Lee, **DaBin Yim**, Chanhee Choi, Paul V. Braun, Sang Uck Lee, and Jong-Ho Kim, 'Molecular Engineering of Nanostructures and Activities on Bifunctional Oxygen Electrocatalysts for Zinc-Air Batteries', *Applied Catalysis B: Environmental*, **2020**, 270, 118869
8. **DaBin Yim***, Faizan Raza*, Jung Hyun Park, Jun-Hyeong Lee, Hye-In Kim, Jin-Kyoung Yang, In-Jun Hwang, Jong-Ho Kim*, 'Ultrathin WO₃ Nanosheets Converted from Metallic WS₂ Sheets by Spontaneous Formation and Deposition of PdO Nanoclusters for Visible Light-driven C-C Coupling Reactions', *ACS Applied Materials & Interfaces*, **2019**, 11, 36960-36969. ***These authors contributed equally to this work.**
9. Ji Eun Kim, **DaBin Yim**, Sang Woo Han, Jin Nam, Jong-Ho Kim, and Jin Woong Kim, 'Effective Suppression of Oxidative Stress on Living Cells in Hydrogel Particles Containing a Physically Immobilized WS₂ Radical Scavenger', *ACS Applied Materials & Interfaces*, **2019**, 11, 18817-18824
10. Jin-Kyoung Yang, In-Jun Hwang, Myeong Geun Cha, Hye-In Kim, **DaBin Yim**, Dae Hong Jeong, Yoon-Sik Lee, and Jong-Ho Kim, 'Reaction Kinetics-Mediated Control over Silver Nanogap Shells as Surface-Enhanced Raman Scattering Nanoprobes for Detection of Alzheimer's Disease Biomarkers', *Small*, **2019**, 15, 1900613
11. Jin-Kyoung Yang, In-Jun Hwang, Su-Ji Jeon, Jong-Min Ju, Hye-In Kim, **DaBin Yim**, Yoon-Sik Lee, and Jong-Ho Kim, 'Atomically-tailored Graphene Oxide Displaying Enhanced Fluorescence for the Improved Optical Sensing of MMP-2', *Sensors & Actuators B: Chemical*, **2019**, 284, 485-493
12. Ji Eun Kim*, **DaBin Yim***, Chi Ho Lee, Byoengsun Jun, Jin Nam, Sang Hoon Han, Sang Uck Lee, Jong-Ho Kim, and Jin Woong Kim, 'Environmental Stimuli-irresponsive Long-term Radical Scavenging of Two-Dimensional Transition Metal Dichalcogenides through Defect-Mediated Hydrogen Atom Transfer in Aqueous Media', *Advanced Functional Materials*, **2018**, 28, 1802737. ***These authors contributed equally to this work.**
13. Jin-Kyoung Yang, Hye-Rim Lee, In-Jun Hwang, Hye-In Kim, **DaBin Yim**, and Jong-Ho Kim, 'Fluorescent 2D-WS₂ Nanosheets Bearing Chemical Affinity Elements for the Recognition of Glycated Hemoglobin', *Advanced Healthcare Materials*, **2018**, 7, 1701496
14. Jin-Kyoung Yang, Eunjin Lee, In-Jun Hwang, **DaBin Yim**, Juhee Han, Yoon-Sik Lee, Jong-Ho Kim, 'β-Lactoglobulin Peptide Fragments Conjugated with Caffeic Acid Displaying Dual Activities for Tyrosinase Inhibition and Antioxidant Effect', *Bioconjugate Chemistry*, **2018**, 29, 1000-1005
15. **DaBin Yim***, Ji Eun Kim*, Hye-In Kim, Jin-Kyoung Yang, Tae-Woog Kang, Jin Nam,

Sang Hoon Han, Byeongsun Jun, Chi Ho Lee, Sang Uck Lee, Jin Woong Kim and Jong-Ho Kim, 'Adjustable Intermolecular Interactions Allowing 2D Transition Metal Dichalcogenides with Prolonged Scavenging Activity for Reactive Oxygen Species', *Small*, **2018**, 14, 1800026. *These authors contributed equally to this work.

16. Bohyun Kim, Sang Woo Han, Song-Ee Choi, **DaBin Yim**, Jong-Ho Kim, Hans M. Wyss, Jin Woong Kim, 'Monodisperse Micro-Shell Structured Gelatin Microparticles for Temporary Chemoembolization', *Biomacromolecules*, **2018**, 19, 386-391
17. Faizan Raza, **DaBin Yim**, Jung Hyun Park, Hye-In Kim, Su-Ji Jeon, Jong-Ho Kim, 'Structuring Pd Nanoparticles on 2H-WS₂ Nanosheets Induces Excellent Photocatalytic Activity for Cross-Coupling Reactions under Visible Light', *Journal of the American Chemical Society*, **2017**, 139, 14767-14774
18. Man-Jin Kim, Su-Ji Jeon, Tae Woog Kang, Jong-Min Ju, **DaBin Yim**, Hye-In Kim, Jung Hyun Park, Jong-Ho Kim, '2H-WS₂ Quantum Dots Produced by Modulating the Dimension and Phase of 1T-Nanosheets for Antibody-Free Optical Sensing of Neurotransmitters', *ACS Applied Materials & Interfaces*, **2017**, 9, 12316-12323
19. Jung Hyun Park, Faizan Raza, Su-Ji Jeon, **DaBin Yim**, Hye-In Kim, Tae Woog Kang, Jong-Ho Kim, 'Oxygen-mediated formation of MoS_x-doped hollow carbon dots for visible light-driven photocatalysis', *Journal of Materials Chemistry A*, **2016**, 4, 14796-14803
20. Tae Woog Kang, Su-Ji Jeon, Hye-In Kim, Jung Hyun Park, **DaBin Yim**, Hye-Rim Lee, Jong-Min Ju, Man-Jin Kim, Jong-Ho Kim, 'Optical detection of enzymatic activity and inhibitors on non-covalently functionalized fluorescent graphene oxide', *ACS Nano*, **2016**, 10, 5346-5353
21. Hye-Rim Lee, Jung Hyun Park, Faizan Raza, **DaBin Yim**, Su-Ji Jeon, Hye-In Kim, Ki Wan Bong, Jong-Ho Kim, 'Photoactive WS₂ nanosheets bearing plasmonic nanoparticles for visible light-driven reduction of nitrophenol', *Chemical Communications*, **2016**, 52, 6150-6153
22. **DaBin Yim**, Homan Kang, Su-Ji Jeon, Hye-In Kim, Jing-Kyoung Yang, Tae Woog Kang, Sangyeop Lee, Jaebum Choo, Yoon-Sik Lee, Jin Woong Kim and Jong-Ho Kim, 'Graphene Oxide-Encoded Ag Nanoshells with Single-Particle Detection Sensitivity towards Cancer Cell Imaging based on SERRS', *Analyst*, **2015**, 140, 3362-3367
23. Hye-In Kim, Dobeon Hwang, Su-Ji Jeon, Sangyeop Lee, Jung Hyun Park, **DaBin Yim**, Jin-Kyoung Yang, Homan Kang, Jaebum Choo, Yoon-Sik Lee, Junho Chung, Jong-Ho Kim, 'Orientation and density control of bispecific anti-HER2 antibody on functionalized carbon nanotubes for amplifying effective binding reactivity to cancer cells', *Nanoscale*, **2015**, 7, 6363-6373
24. Su-Ji Jeon, Seon-Yeong Kwak, **DaBin Yim**, Jong-Min Ju, and Jong-Ho Kim,

‘Chemically-Modulated Photoluminescence of Graphene Oxide for Selective Detection of Neurotransmitter by “Turn-On” Response’, *Journal of the American Chemical Society*, **2014**, 136, 10842-10845

25. Jung Hyun Park, Faizan Raza, Su-Ji Jeon, Hye-In Kim, Tae Wook Kang, **DaBin Yim** and Jong-Ho Kim, ‘Recyclable *N*-heterocyclic carbene/palladium catalyst on graphene oxide for the aqueous-phase Suzuki reaction’, *Tetrahedron letters*, **2014**, 55, 3426-3430

Patents:

Korea

1. ‘Pharmaceutical composition for preventing or treating sepsis comprising functionalized transition metal dichalcogenide’, 10-2020-0077609 (applied), **2020-06**, Korea, Jong-Ho Kim, Chul-Su Yang, **DaBin Yim**
2. ‘Metal oxide/transition metal dichalcogenides nanosheets and method of fabricating of the same’, application technology of catalytic material, 10-2019-0049857, **2019-04**, Korea, Jong-Ho Kim, **DaBin Yim**, Jun-Hyeong Lee
3. ‘Composition for maintaining titer of antioxidants comprising functionalized transition metal dichalcogenides, 10-2018-0140668 (applied), **2018-11**, Korea, Joonho Choi, Jong-Ho Kim, Jin Woong Kim, Jin Nam, Bongsoo Pi, Ji Eun Kim, Wonseok Park, **DaBin Yim**, Sanghoon Han
4. ‘Functionalized transition metal dichalcogenides and composition for antioxidation containing thereof, 10-2017-0053805 (applied), **2017-04**, Korea, Johnhwan Lee, Jin Nam, Jong-Ho Kim, Jin Woong Kim, **DaBin Yim**, Ji Eun Kim

U.S.

1. ‘Functionalized transition metal dichalcogenides and composition for antioxidation containing the same, US 10,695,282 B2 (granted), **2020-06**, United States, Jin Nam, Jong-Ho Kim, Jin Woong Kim, Johnhwan Lee, Ji Eun Kim, **DaBin Yim**

International Conferences (as a presenter):

1. 'Excellent activity of biocompatible transition metal dichalcogenide nanosheets for scavenging reactive oxygen species' (Oral), 256th ACS National Meeting & Exposition, Boston, US, **2018-08**
2. 'Two-dimensional nanosheet antioxidants' (Poster), 254th ACS National Meeting & Exposition, Washington, D.C., US, **2017-08**
3. '2D-Nanosheets with palladium nanoparticles for C-C coupling reactions' (Poster), 253th ACS National Meeting & Exposition, San Francisco, US, **2017-04**
4. 'WS₂ nanosheets bearing metal nanoparticles for photocatalyzed C-C coupling reactions' (Poster), 251st ACS National Meeting & Exposition, San Diego, US, **2016-03**
5. 'Graphene Oxide as a Raman Label on Ag Nanoshells for Surface-Enhanced Resonance Raman Scattering-based Detection of Cancer Cells' (Poster), 248th ACS National Meeting & Exposition, San Francisco, US, **2014-08**

Honors and Awards:

1. **OUT-STANDING Post-Doc Fellowship**, Hanyang University, 2022-02
2. Biocompatible transition metal dichalcogenides nanosheets for treatment of inflammatory diseases *via* scavenging ROS and RNS, **Best paper award**, Hanyang University, 2021-02