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KYUEUI LEE
Department of Chemistry
Kyungpook National University

EDUCATION

Ph.D. Chemistry	KAIST , South Korea	2012–2017
B.S. Chemistry	KAIST , South Korea	2008–2012

RESEARCH EXPERIENCE

Assistant Professor	Kyungpook National University , South Korea Department of Chemistry	2021–present
Adjunct Professor	Kyungpook National University Hospital , South Korea Biomedical Research Institute	2022–present
Postdoc/Visiting Scholar	University of California at Berkeley , United States Department of Bioengineering	2016–2021
Research Affiliate	Lawrence Berkeley National Lab , United States Materials Sciences Division	2018–2021

RESEARCH SUMMARY

Core – polymer chemistry; biomedical engineering; biomimetics

Tools – bioinspired polymers

Vision – synthesizing functional materials, based on fundamental understanding of polyphenols in nature

HONORS AND AWARDS

Young Scientist Award, Miwon Co. Ltd., Korean Society of Industrial and Engineering Chemistry (2022)

Young Scientist Fellowship, Institute for Basic Science (2019) – gratefully declined

Berkeley Postdoctoral Association Professional Development Award, University of California at Berkeley (2019)

Young Professionals NET Group Program, Korean Federation of Science and Technology Societies (2018)

Best Presentation Award, KYOTO-KAIST-NTHU Junior Chemist Symposium (2016)

Outstanding Teaching Assistant Award, KAIST (2013)

PROFESSIONAL SERVICE

한국조직공학재생의학회, 신진연구자분과위원회, 위원 (2022 – present)

World Biomaterials Congress 2024, Secretariat Member (2021 – present)

Career Mentor at K-BioX (2021 – present)

Korea Technology Advisory Group (K-TAG) at Korea Institute for Advancement of Technology (2019 – 2021)
Korean Life Scientists in the Bay Area (KOLIS) Leadership (2019)

PEER-REVIEWED PUBLICATIONS

†Denotes equal contribution; *Denotes corresponding author

1. Yuejin Kim, Kyoung-Ik Min*, Sanghwa Jeong*, **Kyueui Lee***, “Facile production of graphene quantum dots using a molecular adhesive membrane filter” *Bull. Korean Chem. Soc.*, in press.
2. Yu Ri Hong, Tae-Ho Kim, Kyeong-Hyeon Park, Jumi Kang, **Kyueui Lee**, Eui Kyun Park, Tae-Geon Kwon, Jeong Ok Lim, Chang-Wug Oh “rhBMP-2 Conjugated 3D-Printed Poly(l-Lactide) Scaffold is an Effective Bone Substitute” *Tissue Eng. Regen. Med.*, in press.
3. Jeehee Lee, Eunsook Park, **Kyueui Lee**, Mikyung Shin, Soohyeon Lee, Miguel Angel Moreno-Villacaja, Haeshin Lee, “Reversible Tissue Sticker Inspired by Chemistry in Plant-Pathogen Relationship” *Acta Biomaterialia*, 2022, in press.
4. Hyunbin Choi and **Kyueui Lee***, “Crosslinking Mechanisms of Phenol, Catechol, and Gallol for Synthetic Polyphenols: A Comparative Review” *Appl. Sci.*, 2022, 12(22), 11626
5. Savannah Britton, **Kyueui Lee**, Liana Azizova, Greg Shaw, Wayne N. Ayre, Jason P. Mansell, “Immobilised teicoplanin does not demonstrate antimicrobial activity against Staphylococcus aureus” *Sci. Rep.*, 2022, 12, 16661.
6. Yuri Jeong, **Kyueui Lee***, “Repetitive Bacterial Disinfection of Respirators by Polydopamine Coating”, *Appl. Sci.* 2022, 12, 8710.
7. Damjung Lee, **Kyueui Lee***, “Role of Catechol in the Stability of Biocoating Materials in Wet Environment”, *Appl. Chem. Eng.* 2022, 33, 216.
8. Hyeju Han, **Kyueui Lee*** Systematic Approach to Mimic Phenolic Natural Polymers for Biofabrication, *Polymers* 2022, 14, 1282.
9. **Kyueui Lee**, Brylee Tiu, Valentin Martchenko, Kristene Mai, Goun Lee, Matthias Gerst, Phillip B. Messersmith, “A Modular Strategy for Functional Pressure Sensitive Adhesives”, *ACS Appl. Mater. Interfaces* 2021, 13, 3161.
10. **Kyueui Lee**†, Minok Park†, Katerina G. Malollari, Jisoo Shin, Sally M. Winkler, Yuting Zheng, Jung Hwan Park, Costas P. Grigoropoulos, and Phillip B. Messersmith “Laser-induced Graphitization of Polydopamine Leads to Enhanced Mechanical Performance While Preserving Multifunctionality”, *Nat. Commun.* 2020, 11, 4848.
11. **Kyueui Lee**†, Agnieszka Kreitschitz†, Jeehee Lee, Stanislav N. Gorb, Haeshin Lee, “Localization of Phenolic Compounds at an Air–Solid Interface in Plant Seed Mucilage: A Strategy to Maximize Its Biological Function?”, *ACS Appl. Mater. Interfaces* 2020, 12, 42531.
12. Abshar Hasan, **Kyueui Lee**, Kunal Tewari, Lalit M. Pandey, Phillip B. Messersmith, Karen Faulds, Michelle Maclean, King Hang Aaron Lau “Surface Design for Immobilization of an Antimicrobial Peptide Mimic for Efficient Anti-biofouling” *Chem. Eur. J.* 2020, 26, 5789.
13. Fiona Baldwin, Tim Craig, Anna I. Shiel, **Kyueui Lee**, Jason P. Mansell “Polydopamine-lysophosphatidate-

- Functionalised Titanium: A Novel Hybrid Surface Finish for Bone Regenerative Applications” *Molecules* 2020, 25, 1583.
14. Yunhan Lee, Kiwoo Jun, **Kyueui Lee**, Youngchang Seo, Changyoung Jung, Munja Kim, Il-Kwon Oh, Haeshin Lee, “Phenol-Derived Carbon Sealant Inspired by a Coalification Process” *Angew. Chem. Int. Ed.* 2020, 59, 3864.
 15. **Kyueui Lee**, Minjae Do, Young Chang Seo, Haeshin Lee, “Wet-to-Dry Hybrid Spinning of Graphene Fiber Inspired by the Mechanisms of Spider Silk Production”, *Adv. Mater. Interfaces* 2018, 5, 1800585.
 16. Zihnil Adha Islamy Mazrad†, **Kyueui Lee**†, Ari Chae, Insik In, Haeshin Lee, Sung Young Park “Progress in internal/external stimuli responsive fluorescent carbon nanoparticles for theranostic and sensing applications” *J. Mater. Chem. B* 2018, 6, 1149.
 17. **Kyueui Lee**, Eunsook Park, Haesung A. Lee, Caroline Sugnaux, Mikyung Shin, Chan Jin Jeong, Jeehee Lee, Phillip B. Messersmith, Sung Young Park, Haeshin Lee “Phenolic Condensation and Facilitation of Fluorescent Carbon Dot Formation: A Mechanism Study” *Nanoscale* 2017, 9, 16596.
 18. **Kyueui Lee**, Haeshin Lee, Seongwoo Ryu “Salting Up of Chemically Modified Graphene to Assemble Large-Scale Transparent Conductive Films”, *J. Nanosci. Nanotechnol.* 2017, 17, 7928.
 19. Jung Seung Lee, Jong Seung Lee, Min Suk Lee, Soohwan An, Kisuk Yang, **Kyueui Lee**, Hee Seok Yang, Haeshin Lee, Seung-Woo Cho “Plant Flavonoid-mediated Multifunctional Surface Modification Chemistry: Catechin Coating for Enhanced Osteogenesis of Human Stem Cells” *Chem. Mater.* 2017, 29, 4375.
 20. Inseong You, Hyejin Jeon, **Kyueui Lee**, Minjae Do, Young Chang Seo, Haesung A. Lee, Haeshin Lee, “Polydopamine Coating in Organic Solvent for Material-independent Immobilization of Water-insoluble Molecules and Avoidance of Substrate Hydrolysis” *J. Ind. Eng. Chem.* 2017, 46, 379.
 21. **Kyueui Lee**, Ekavianty Prajatelista, Dong Soo Hwang, Haeshin Lee, “Role of Dopamine Chemistry in the Formation of Mechanically Strong Mandibles of Grasshoppers” *Chem. Mater.* 2015, 27, 6478.
 22. Seongwoo Ryu, Jeffrey B. Chou, **Kyueui Lee**, Dongju Lee, Soon Hyung Hong, Rong Zhao, Haeshin Lee, Sanggook Kim, “Direct Insulation-to-Conduction Transformation of Adhesive Catecholamine for Simultaneous Increases of Electrical Conductivity and Mechanical Strength of CNT Fiber”, *Adv. Mater.* 2015, 27, 3250.
 23. Seongwoo Ryu†, **Kyueui Lee**†, Soon Hyung Hong, and Haeshin Lee, “Facile Method to Sort Graphene Quantum Dot by Size through Ammonium Sulfate Addition”, *RSC Adv.* 2014, 4, 56848.

RESEARCH PRESENTATIONS

Invited Talks

1. “Nature-inspired Polyphenol Chemistry for Functional Materials”, **Department of Chemistry at Chungbuk National University**, South Korea (1/2021)
 2. “Advanced Functional Coating Inspired by Marine Mussel”, **K-BioX, Mix & Match Seminar** (10/2020)
 3. “Bioinspired Coating for Surface Functionalization: What are the limitations?”, **KOLIS Seminar** (06/2020)
 4. “Enhanced Adhesion and Cohesion in Bioinspired Polyphenol Polymers”, **California Research Alliance by**
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BASF (CARA) Fall Review, Berkeley, California, US (10/2019)

5. “Mussel-inspired Surface Engineering for Biological Environments”, **KOLIS Spring Conference**, Berkeley, California, US (05/2019)
6. “Surface and Interfacial Chemistry of Bio-inspired Phenolic Coatings”, **KSEA Seminar – Berkeley Chapter**, Berkeley, California, US (02/2019)
7. “Vacuum-free Conversion of Polyphenol Coating for Conductive Graphitic Materials”, **Young Professionals Net Program Joint Seminar**, Berkeley, California, US (09/2018)
8. “Immobilizing Biomolecules for Cryo-EM using Mussel-inspired Coating”, **KOLIS Seminar – Berkeley Chapter**, Berkeley, California, US (06/2018)

Selected Oral Presentations (among **total 8** presentations)

1. “Oxygen-Responsive 3D Printing Inspired by Insect Cuticle Sclerotization” **Materials Research Society (MRS)**, Boston, Massachusetts, US (12/2019)
2. “Present and Future of Bioinspired Phenolic Coatings for Surface and Interfacial Engineering”, **AIChE Annual Meeting, Session on Biomaterials and Life Science Engineering: Faculty Candidates I**, Orlando, Florida, US (11/2019)
3. “Wisdom from Basil Seeds: Facilitating Role of Phenolic Molecules in Polysaccharide-based Carbon Dots Formation” **Materials Research Society (MRS)**, Boston, Massachusetts, US (11/2017)
4. “Catecholamine as a Reinforcing Agent in Mechanically Hard Grasshopper Mandibles”, **Materials Research Society (MRS)**, Phoenix, Arizona, US (4/2016)
5. “A New Type of Tanning Molecules Originated from Grasshopper Mandibles”, **KYOTO-KAIST-NTHU Junior Chemist Symposium**, Kyoto, Japan (2/2016) (*awarded for ‘Best Presentation Award’*)
6. “Spectral Tuning of Graphene Quantum Dots by Salting Out”, **The CIMTEC Series of International Conferences on Modern Materials and Technologies Forum on New Materials**, Montecatini Terme, Italy (6/2014)

Selected Poster Presentations (among **total 9** presentations)

1. “Role of Phenolic Compounds in the formation of Fluorescent Carbon Nanoparticles from Natural Polysaccharides” **American Chemical Society (ACS)**, San Francisco, US (4/2017)
2. “Wisdom from Basil Seeds: Phenolic Seed Growth Mechanism for Nano-carbonization of Natural Polymeric Materials”, **Gordon Research Seminars and Conference (GRS & GRC) - Bioinspired Materials**, Les Diablerets, Switzerland (6/2016)
3. “Wet-spinning of Graphene Microfibers by Interfacial Assembly with Branched Cationic Polymers”, **Materials Research Society (MRS)**, Phoenix, Arizona, US (3/2016)