

Junpyo (Patrick) Kwon, Ph.D.

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EDUCATION

University of California, Berkeley (2022) **California, USA**

Doctorate Program in Mechanical Engineering

Thesis: Functional nanocomposites through the design of filler/matrix interfaces

Ph.D. Thesis Advisors: Professor Robert O. Ritchie & Professor Ting Xu

Korea University (2016) **Seoul, Republic of Korea**

Master of Engineering in Mechanical Engineering

Thesis: Coarse-grained computational approaches to study mechanical characteristics of biomaterial

M.S. Thesis Advisor: Professor Sungsoo Na

Korea University (2013) **Seoul, Republic of Korea**

Bachelor of Science in Mechanical Engineering

PROFESSIONAL EXPERIENCE

Ajou University (Mar.2025 – Present) **Suwon, Republic of Korea**

- Assistant Professor at Mechanical Engineering Department
- Research on polymer nanocomposites, biomaterials, and property characterizations.

Matters of Activity (July.2024 – Present) **Berlin, Germany**

- Interdisciplinary methods such as material property characterizations, parametric modeling, and robotic experimentation, leveraging the strengths of materials physics, engineering, and design.
- Develop bioinspired structures to explore the relationships and potentially adaptable interactivities between external environments and internal architecture.
- Research on beeswax luminaires as a sustainable alternative to conventional light fixtures.

Max Planck Institute of Colloids and Interfaces (Sep.2022 – Jan.2025) **Potsdam, Germany**

- Design programmable materials inspired by nature: load-induced fluid flow, Lacunar-canalicular network in bone, vascular architecture.
- Research on the characterizations of physical properties of biomaterials and soft matters in diverse natural organisms.
- Develop/engineer new culture of bio-hybrid materials for biomedical and soft robotics applications.

University of California, Berkeley (Aug.2016 – Aug.2022) **Berkeley, USA**

- Projects involved
 - Department of Energy: Organic/Inorganic Nanocomposites KC31014
 - Defense Advanced Research Projects Agency: Mechanically Robust and Flexible Polymers by Molecular Weaving
- Design/synthesis organic-inorganic hybrid functional materials (homopolymers, block copolymers, nanoparticles, carbon nanotube, graphene, enzymes, covalent organic frameworks, etc.)
- Characterize mechanical properties of organic-inorganic composites (please see *Experimental skills*)
- Develop polymeric composites for sensors, wearable electronics, health monitoring devices, etc.
- Design smart functional materials for 3D printer using organic/inorganics nanocomposites
- Research on analyzing mechanical properties of block copolymer nanocomposites

Korea University (Nov.2013 – Feb.2016) **Seoul, Republic of Korea**

- Research on coarse-grained methods such as Elastic Network Model, MARTINI, etc. applied into the structures of proteins to understand and analyze conformational changes solving limited computer capacity problem
- Research on Molecular Dynamics with studying related programs such as NAMD, GROMACS, etc. for understanding proteins' dynamics and their mechanical properties
- Focus on the convergence of Engineering Vibrations (Normal Mode Analysis, Eigen Problems, etc.), Biochemistry and Biology (Actin, Cofilactin, etc.)

PUBLICATIONS

- * Polymer-grafted nanoparticle superlattices as metal alloy analogues Y. Qian, A. Laine, **J. Kwon**, P. Pieters, T. Chen, B. Chang, X. Wu, R. Ruiz, A. Lin, J. Schwartz, R. Hovden, T. Russell, P. Ercius, M. Salmeron, T. Xu *In-prep* (2025)
 - * Machine learning-based design optimization of wing structure inspired by dragonfly **J. Kwon**, S. Lee, S. Yin, Y. Chen, J. Ell, G. Gu, and R. Ritchie *In-prep* (2025)
 - * Fluid transport driven by load-induced substrate deformations **J. Kwon**, N. Yandrapalli, J. Gonthier, C. Bidan, R. Weinkamer, and P. Fratzl *In-prep* (2025)
 - * Beeswax luminaries: sustainable lighting through materials design **J. Kwon**, P. Asa, M. Jaffar-Bandjee, S. Amini, P. Fratzl, and K. Dierichs *Submitted* (2025)
 - * Nanoconfined transport and catalysis program plastic fates I. Jayapurna, A. Wang, C. DelRe, **J. Kwon**, L. Hollingsworth, B. Ongawan, S. Hesse, and T. Xu *Submitted* (2025)
19. Reversible nanocomposite by programming amorphous polymer conformation under nanoconfinement T. Chen, Y. Qian, A. Laine, **J. Kwon**, L. Liu, S. Pal, S. Gupta, E. Vargo, G. Su, R. Ritchie, S. Ketten, R. Wang, M. Salmeron and T. Xu *Adv. Mater.* (IF: 27.4) (DOI: <https://doi.org/10.1002/adma.202415352>) (2025)
 18. Editorial: multifunctional, flexible, polymeric materials with controlled nanostructures L. Ren, Z. Peng, **J. Kwon**, H. Li *Front. Mater.* (IF: 2.6) (2024)
 17. Advancing programmable metamaterials through machine learning-driven buckling strength optimization S. Lee, **J. Kwon**, H. Kim, R. Ritchie, G. Gu *Curr. Opin. Solid State Mater. Sci.* (IF: 12.2) (DOI: <https://doi.org/10.1016/j.cossms.2024.101161>) (2024)
 16. The propensity for covalent organic frameworks to template polymer entanglement E. Neumann*, **J. Kwon***, C. Gropp, L. Ma, R. Giovine, T. Ma, N. Hanikel, K. Wang, T. Chen, S. Jagani, R. Ritchie, T. Xu, and O. Yaghi *Science* (*: Co-first) (IF: 44.7) (DOI: <https://doi.org/10.1126/science.adf2573>) [[Link 1](#)] (2024)
 15. Functional composites by programming entropy-driven nanosheet growth E. Vargo, L. Ma, Q. Zhang, **J. Kwon**, K. Evab, X. Tang, V. Tovmasyan, J. Jan, A. Arias, H. Destailats, I. Kuzmenko, J. Ilavsky, W. Chen, R. Ritchie, Y. Liu, T. Xu *Nature* (IF: 64.8) (DOI: <https://doi.org/10.1038/s41586-023-06660-x>) (2023)
 14. Molecular weaving of chicken wire covalent organic frameworks X. Han, T. Ma, B. Lannenga, X. Yao, E. Neumann, P. Kumar, **J. Kwon**, Z. Rong, K. Wang, Y. Zhang, J. Navarro, R. Ritchie, Y. Cui, O. Yaghi *Chem* (IF: 25.832) (DOI: <https://doi.org/10.1016/j.chempr.2023.07.015>) (2023)
 13. Flexible all-organic nanocomposite films interlayered with in situ synthesized covalent organic frameworks for electrostatic energy storage H. Li, Z. Xie, C. Yang, **J. Kwon**, A. Lainé, C. Dun, A. Galoustian, X. Li, P. Liu, J. Urban, Z. Peng, M. Salmeron, R. Ritchie, T. Xu, Y. Liu *Nano Energy* (IF: 19.069) (DOI: <https://doi.org/10.1016/j.nanoen.2023.108544>) (2023)
 12. High performing polysulfate dielectrics for electrostatic energy storage under harsh conditions H. Li, B. Chang, H. Kim, Z. Xie, A. Lainé, L. Ma, T. Xu, C. Yang, **J. Kwon**, S. Shelton, L. Klivansky, V. Altoe, B. Gao, A. Schwartzberg, Z. Peng, R. Ritchie, T. Xu, M. Salmeron, R. Ruiz, K. Sharpless, P. Wu, and Y. Liu *Joule* (IF: 41.248) (DOI: <https://doi.org/10.1016/j.joule.2022.12.010>) [[Link 1](#)] (2023)
 11. Catenane covalent organic frameworks constructed from polyhedra T. Ma, Y. Zhou, C. Diercks, **J. Kwon**, F. Gándara, H. Lyu, N. Hanikel, Y. Liu, N. Diercks, R. Ritchie, D. Proserpio, O. Terasaki, and O. Yaghi *Nat. Synth.* (IF: 49.962) (DOI: <https://doi.org/10.1038/s44160-022-00224-z>) [[Link](#)] (2023)
 10. Conductive ink with circular life cycle for printed electronics **J. Kwon**, C. DelRe, P. Kang, A. Hall, D. Arnold, L. Ma, I. Jayapurna, M. Michalek, R. Ritchie, and T. Xu *Adv. Mater.* (IF: 30.849) (DOI: <https://doi.org/10.1002/adma.202202177>) [[Link 1](#), [Link 2](#), [Link 3](#)] (2022)
 9. Near-complete depolymerization of polyesters with nano-dispersed enzymes C. DelRe, Y. Jiang, P. Kang **J. Kwon**, Z. Ruan, L. Ma, A. Hall, K. Zolkin, T. Li, R. Ritchie, T. Russell, and T. Xu *Nature* (IF: 45.819) (DOI: <https://doi.org/10.1038/s41586-021-03408-3>) (2021)
 8. Scalable electrically conductive spray coating based on block copolymer nanocomposites by **J. Kwon**, K. Evans, L. Ma, D. Arnold, M. Yildizdag, T. Zohdi, R. Ritchie, and T. Xu, *ACS Appl. Mater. Interfaces* (IF: 8.456) (DOI: <https://doi.org/10.1021/acsami.2c01111>) (2022)

doi.org/10.1021/acsami.9b20817) (2020)

7. Embedded enzyme nanoclusters depolymerize polyesters via chain-end mediated processive degradation C. DelRe, **J. Kwon**, P. Kang, L. Ma, A. Hall, Z. Ruan, K. Zolkin, T. Li, R. Ritchie, and T. Xu *bioRxiv* (DOI: <https://doi.org/10.1101/2020.04.25.052050>) (2020)
6. Hyperelastic phase-field fracture mechanics modeling of the toughening induced by bouligand structures in natural materials by S. Yin, W. Yang, **J. Kwon**, A. Wat, M. Meyers, and R. Ritchie, *J. Mech. Phys. Solids*. Vol. 131 pp. 204-220, (IF: 4.087) (DOI: [10.1016/j.jmps.2019.07.001](https://doi.org/10.1016/j.jmps.2019.07.001)) (2019)
5. Steered molecular dynamics analysis of the role of cofilin in increasing the flexibility of actin filaments by J. Kim, **J. Kwon**, I. Baek, and S. Na, *Biophys. Chem.* Vol. 218 pp. 27-35 (IF: 2.363) (DOI: [10.1016/j.bpc.2016.08.002](https://doi.org/10.1016/j.bpc.2016.08.002)) (2016)
4. Sodium chloride's effect on self-assembly of diphenylalanine bilayer by **J. Kwon**, M. Lee, and S. Na, *J. Comput. Chem.* Vol. 37 pp. 1839-1846, Cover Paper of July issue (IF : 3.589) (DOI: [10.1002/jcc.24404](https://doi.org/10.1002/jcc.24404)) (2016)
3. Biophysical characterization of cofilin-induced extension-torsion coupling in actin filaments by J. Kim*, **J. Kwon***, I. Baek, and S. Na, *J. Biomech.* Vol. 49 pp. 1831-1835 (IF : 2.751) (*: Co-first) (DOI: [10.1016/j.jbiomech.2016.04.015](https://doi.org/10.1016/j.jbiomech.2016.04.015)) (2016)
2. Mechanical behavior comparison of spider and silkworm silks using molecular dynamics at atomic scale by M. Lee*, **J. Kwon*** and S. Na, *Phys. Chem. Chem. Phys.* Vol. 18 pp. 4814-4821 (IF : 4.493) (*: Co-first) (DOI: [10.1039/c5cp06809f](https://doi.org/10.1039/c5cp06809f)) (2016)
1. Cofilin reduces the mechanical properties of actin filaments : approach with coarse-grained methods by J. Kim*, **J. Kwon***, I. Baek, H. Park and S. Na, *Phys. Chem. Chem. Phys.* Vol. 17 pp. 8148-8158 (IF: 4.493) (*: Co-first) (DOI: [10.1039/c4cp06100d](https://doi.org/10.1039/c4cp06100d)) (2015)

PATENTS

2. Molecular weaving additives to enhance the mechanical properties of materials (0121232021136, Patent) C. Gropp, E. Neumann, **J. Kwon**, T. Xu, and O. Yaghi *In-process* (2021)
1. Bioactive plastics with programmable degradation and microplastic elimination (B20-075-1, Patent) T. Xu, C. DelRe, and **J. Kwon** *In-process* (2022)

CONFERENCES

13. Fluid transport driven by load-induced substrate deformations by **J. Kwon**, N. Yandrapalli, J. Gonthier, C. M. Bidan, R. Weinkamer, P. Fratzl, *ICTAM* (2024)
12. Contact angle pump inspired by load-induced fluid flow in bone by **J. Kwon**, N. Yandrapalli, J. Gonthier, C. M. Bidan, R. Weinkamer, P. Fratzl, *BioINSP* (2024)
11. Phase-field fracture mechanics modeling of the toughening induced by bouligand structures in natural materials by S. Yin, W. Yang, **J. Kwon**, A. Wat, M. Meyers, and R. Ritchie, *SES Conference* (2019)
10. The study of mechanical property of block copolymer composites tuned by nanoscale polymeric morphology and nanoparticles by **J. Kwon**, R. Ritchie, and T. Xu, *American Physical Society (APS) March Meeting* (2019)
9. Electrically conductive block copolymer nanocomposites for large-scale coating applications by **J. Kwon**, R. Ritchie, and T. Xu, *American Physical Society (APS) March Meeting* (2019)
8. Mechanical sensors using piezo-resistive block copolymer nanocomposite with 3d printing and spraying processes by **J. Kwon**, R. Ritchie, and T. Xu, *American Physical Society (APS) March Meeting* (2018)
7. Designing 3d printer functional materials using block copolymer nanocomposite by **J. Kwon**, E. Yildizdag, T. Zohdi, R. Ritchie, and T. Xu, *NSET mini-retreat* (2017)
6. Analysis of the mechanical properties of actin applying coarse-graining method (Korean) by J. Kim, **J. Kwon**, and S. Na, *The Korean Society of Mechanical Engineers (KSME)* (2016)

5. Mechanical characteristic of cofilin-actin filament using coarse-grained molecular dynamics simulation by I. Baek, **J. Kwon**, J. Kim and S. Na, *The Korean Society of Mechanical Engineers (KSME)* (2016)
4. Mechanical characterization of spider and silkworm silk at nano scale using combined molecular dynamics by M. Lee, **J. Kwon**, Y. Kim and S. Na, *The Korean Society of Mechanical Engineers (KSME)* (2016)
3. Mechanical properties of actin filament analyzed with coarse-grained molecular dynamics and mechanical vibration by **J. Kwon**, J. Kim, I. Baek and S. Na, *Korea-Japan Symposium (KSME)* (2015)
2. Applying molecular dynamics and elastic network model to analyze mechanical properties of actin filaments by **J. Kwon**, J. Kim, I. Baek and S. Na, *The Korean Society for Noise and Vibration Engineering (KSNVE)* (2015)
1. Mechanical properties of cofilactin and actin using elastic network model by M. Lee, **J. Kwon***, J. Kim and S. Na, *The Korean Society of Mechanical Engineers (KSME)* (* : Presenter) (2014)

SEMINARS & LECTURES

7. Emergent properties of metamaterials, **Max Planck Institute of Colloids and Interfaces** (May.08.2023)
6. Functional nanocomposites through the design of filler/matrix interfaces, *Ajou University* (Sep.26.2022)
5. Functional nanocomposites through the design of filler/matrix interfaces, *Ewha Womans University* (Sep.21.2022)
4. Functional nanocomposites through the design of filler/matrix interfaces, *Hoseo University* (Sep.20.2022)
3. Functional nanocomposites through the design of filler/matrix interfaces, *Korea University* (Sep.19.2022)
2. Functional nanocomposites through the design of filler/matrix interfaces, *Sungkyunkwan University* (Sep.19.2022)
1. A vision of mechanical engineering department, *Seoul Cyber University* (Nov.18.2021) [[Link](#)]

TEACHING EXPERIENCE

University of California, Berkeley *GSI (MSE 113)* (Aug.2020 – Dec.2020) **Berkeley, USA**

- Deformation and fracture in engineering and some biological materials, including elastic and plastic deformation from simple continuum mechanics and microscopic viewpoints
- Dislocation theory, alloy hardening and creep deformation
- Fracture mechanisms, linear elastic and nonlinear elastic fracture mechanics, toughening of metals, ceramics and composites, environmentally-assisted cracking
- Fatigue failure, subcritical crack growth, stress/life and damage-tolerant design approaches
- Online Resources: [[Link](#)]

University of California, Berkeley *GSI (E45 & E45L)* (Jan.2017 – May.2017) **Berkeley, USA**

- Assisted lab experiments (E45L) related in properties of materials.
- Gave lectures with regard to fundamental principles in engineering materials' properties.

Unistudy, Lecturer (Apr.2016 – Feb.2025) **Seoul, Republic of Korea**

- Lecture mechanical engineering courses: mechanics, vibrations, and MATLAB
- Statics: [[Link](#)]
- Solid Mechanics: [[Link](#)]
- Thermodynamics: [[Link](#)]
- Fluid Mechanics: [[Link](#)]
- Dynamics: [[Link](#)]
- MATLAB: [[Link](#)]
- Mechanical Vibration: [[Link](#)]
- Heat Transfer: [[Link](#)]
- Engineering Mathematics: [[Link](#)]

Korea University, Teaching Assistant (Creative Design) (Sep.2014 – Dec.2014)

Seoul, Republic of Korea

- Assisted undergraduate students who participated in Creative Design Class and helped them to improve their performance in Mechanical Design Contest
- Learned how to operate machines such as Milling, Lathe, etc. and achieved skills in Bench Works, Drilling, Boring, Tapping, Grinding, etc.

Mega MD, Lecturer (Aug.2012 – Oct.2012)

Seoul, Republic of Korea

- Taught mechanical engineering courses: Materials of Mechanics, Solid Mechanics, Thermodynamics, and Fluid Mechanics
- Counseled students and mentored them both theoretically and mentally

The George Washington University, Teaching Assistant (Korean) (Jan.2012 – May.2012)

Seoul, Republic of Korea

- Assisted Korean Class in the George Washington University as an unofficial assistant of professor Kang.
- Prepared class material and taught basic Korean in English.

WORK EXPERIENCE

Apple, Inc., iPhone PD, Plastic Materials Engineer Intern (Aug. 2019 – July.2020)

Cupertino, USA

- Projects involved: N301, DUNKIN, B389, D5X, D6X, PE85, etc.
- Designed testing methods and protocols
- Characterized physical properties of polymers used in Apple products
- Constructed the database of tested properties in Polymer Characterization Lab (using FileMaker & SQL)

Hyundai Heavy Industries, Ltd., Plant Division, Boiler Engineer (Jan.2013 – Sep.2013)

Ulsan, Republic of Korea

- Participated in Jeddah South Thermal Power Plant Project, Shuqaiq Thermal Power Plant Project, GE #3,4 Project, HDO #8,9 Project as regards super-critical boiler and CFBC (Circulating Fluidized Bed Combustion boiler)
- Managed international vendors regarding Air Ducts, Gas Ducts, FGD Ducts, SCR Reactors, Air/Gas Dampers, Electric Precipitators, etc. and reviewed all received documents with stress analysis and reference drawings
- Inspected Swiss SCR Reactor CFD and Physical Model Tests
- Wrote the paper (engineering report) '*JSTPP Duct Stiffener Strength Calculation*'
- Focused on minimizing M/H and maximizing work efficiency with mechanical engineering knowledge and past projects' record

Invest Sweden Korea, Business Development Team, Full-time Assistant (June.2012 – Aug.2012)

Seoul, Republic of Korea

- Introduced Swedish corporations and technologies to Korean corporations by managing all meetings and coordinating the schedules of each company
- Translated English into Korean and vice versa and kept official documents up-to-date
- Assisted seminar hosting by providing clients with information to help them do business in the emerging market

Microsoft Korea, General Management Department, Intern (July.2011 – Aug.2011)

Seoul, Republic of Korea

- Participated in the 'making profits through Korean wave' group project and organized M.G.X Party as part of the G.M. department
- Learned about M.S. systems and experienced business life at M.S.

EXTRA-CURRICULAR ACTIVITIES

Management Consulting Club (MCC), Senior member (Sep.2011 – Dec.2012)

Seoul, Republic of Korea

- Served as project team leader and analyzed and solved a Harvard business case relating to the beverage industry and actively participated in case studies related to the automobile parts industry and mobile industry
- Participated in Korean Undergraduate Management Society (KUMS), an alliance of business student clubs from four top-ranked universities to provide human network and diverse intellectual stimuli to club members

Son of Pitches, A Cappella Group in The George Washington University (Jan.2012 – May.2012)

Washington D.C., USA

- Sang tenor in an a cappella group
- Participated in two concerts in Washington, D.C.

HONORS AND AWARDS

13. Best Poster Award, BioInspired Materials Sponsored by Small Structures Wiley (2024)

12. Jane Lewis Fellowship (\$64,308.04 per year – tuition and stipends included (2017 – 2019))

11. Create3D: 3D Printing Designathon, UC Berkeley – “Just Add Music” (Best Audio – Prototype) (Apr.2017)
10. Five Talents Scholarship, Five Talents Scholarship Foundation (1st Semester) (2015)
9. BK21PLUS Scholarship, Korea University (1st Semester) (2015)
8. BK21PLUS Scholarship, Korea University (2nd Semester) (2014)
7. Research Assistant Scholarships, Korea University (2nd Semester) (2014)
6. Honors Scholarships, Korea University (1st Semester) (2012)
5. Mechanical Drawing Competition, General Motors (*second place*) (2011)
 - Led a team project with Mechanical Engineering students at Korea University to design a water pump system (Dec. 2011)
4. Semester High Honors, Korea University (2nd Semester) (2011)
3. Honors Scholarships, Korea University (2nd Semester) (2011)
2. Semester High Honors, Korea University (1st Semester) (2011)
1. General Paik Leadership Award, General Paik and U.S. Lieutenant General Fill (*National Final first place*) (2010)
 - Presented thorough knowledge regarding military operations and regulations in the capacity of the best Korean Augmentation To the United States Army
 - Led and counseled my subordinates by showing precise discipline (Aug.2010)

SKILLS AND ADDITIONAL INFORMATION

- **Characterization Techniques (Polymers):**
 - Mechanical Properties Analysis: Tensile, Shear, Bending, Hardness, Dynamic Impact, Dynamic Mechanical Analysis (DMA), Rheometer, Thermomechanical Analysis (TMA) Fracture, Fatigue, Cyclic, Nanoindentation, Nano-DMA, Nano-Scratch, Atomic Force Microscopy (AFM) modulus mapping, AFM indentation, Adhesion, Bergen Jigs tests, etc.
 - Structural Analysis: Small Angle X-ray Scattering (SAXS), Wide Angle X-ray Scattering (WAXS), X-ray Diffraction (XRD), Grazing Incidence SAXS (GISAXS), GIWAXS, Optical Microscopy (OM), Scanning Electron Microscopy (SEM), Field Emission SEM (FE-SEM), AFM, Transmission Electron Microscopy (TEM), Helium Ion Microscopy (HIM), Dynamic Light Scattering (DLS), 3D Laser Profilometer, etc.
 - Chemical Analysis: X-ray Photoelectron Spectroscopy (XPS), Thermogravimetric Analysis (TGA), Differential Scanning Calorimetry (DSC), Fourier-Transform Infrared Spectroscopy (FTIR), Gel Permeation Chromatography (GPC), Raman Spectroscopy
 - Others: Spectrophotometer, Haze meter, Micro-polishing
- **Manufacturing**: Microfluidics Fabrications (PDMS, UV-lithography), 3D Printings (FDM, Polyjet, Stereolithography, LDM), Laser-cutters, CNC, Metal shop, Injection Molding
- **Electrochemistry**: Cyclic Voltammetry (CV)
- **Computer Skills**
 - Full proficiency in 3D Modeling tool; Auto CAD, Autodesk Fusion 360, Solidworks, Pro-E, NX
 - Full proficiency in Microsoft Office; especially in Excel, Power Point, Word (Specialist Certificate, Feb. 2008)
 - Full proficiency in MATLAB, Python, R, FileMaker
 - Full proficiency in language and software regarding 3D printing; g-code, slicers, etc.
 - Finite Element Method (FEM) using Abaqus, COMSOL, ANSYS, HyperMesh, HyperView (Certificate of the Completion of Altair’s Training Course, July. 2015)
 - Adobe Illustrator, Origin, Igor
 - C++
- **Volunteer works**
 - Tutoring underprivileged children from multicultural families (June. 2015 – Dec. 2015)
 - English teaching for Dong-Du-Cheon citizens (Feb. 2009 – July. 2009)
 - Mentoring and teaching program for underprivileged children (Dec. 2009 – Mar. 2010)

- **Interests**

- Cycling (Certified completion of South Korea's Four Rivers Cycling Course, June. 2012)
- Piano and music composition

REFERENCES

Prof. Dr. Dr.h.c. Peter Fratzl

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Web: <https://www.mpikg.mpg.de/biomaterials/director/peter-fratzl>

Prof. Robert O. Ritchie

H.T. & Jessie Chua Distinguished Professor of Engineering

Professor

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Prof. Sungsoo Na

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