

Curriculum Vitae

◆ Personal Data

Name **Byung Ho Lee**
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◆ Research Area

Long-time Scale Transition Prediction
DNA Nanostructure Design
Multiscale Modeling of Biomolecular Structure

◆ Education

Present **Ph.D. Candidate** in Mechanical Engineering, Sungkyunkwan University,
Suwon, Korea
Advisor: Professor Moon Ki Kim

2014 Feb. **B.S.E** in Mechanical Engineering, Sungkyunkwan University, Suwon, Korea

◆ Awards and honors

2019 **Travel Award**, Biophysical Society 63rd Annual Meeting, USA

2017 **Best Poster Award**, 4th KMSM Multiscale & Multiphysics Mechanics Symposium, Korea
KSCM Outstanding Poster Award, Korean Society for Computational Mechanics, Korea

2015 **Student Presentation Award**, Mechanical Engineering Seminar 2015, Japan

◆ Publication

▪ Journal Articles

11. **Byung Ho Lee**, H. Kim, S.W. Park, M.K. Kim, "Prediction of Protein Transition Pathway Based on Normal Modes in Internal Coordinate Space" (in preparation).
10. **Byung Ho Lee**, S. Jo, S.W. Park, H. Kim, B.D. Kim, M.K. Kim, "Foldback Intercoil Conformation: A New Insight into the DNA Inversion" (in preparation).
9. J.H. Kim, U. Ro, H. Lee, S.J. Kang, **Byung Ho Lee**, M.K. Kim, "A Direct Assessment of Creep Life based on Small Punch Creep Test", *Theoretical and Applied Fracture Mechanics*, 104(2019):102346, 2019.
8. S. Jo, S. Kim, **Byung Ho Lee**, A. Tandon, B. Kim, S.H. Park, and M.K. Kim, "Fabrication and Characterization of Finite-Size DNA 2D Ring and 3D Buckyball Structures", *International Journal of Molecular Sciences*, 19(7):1895, 2018.
7. **Byung Ho Lee**, S. Jo, M. Choi, M.H. Kim, J.B. Choi, and M.K. Kim, "Normal Mode Analysis of Zika Virus", *Computational Biology and Chemistry*, 72:53-61, 2018.
6. M. Choi, H. Kim, **Byung Ho Lee**, T. Kim, J. Rho, M.K. Kim, and K. Kim, "Understanding carbon nanotube channel formation in the lipid membrane", *Nanotechnology*, 29(11):115702, 2018.
5. J. Son, S. Jo, Y.W. Song, **Byung Ho Lee**, M.K. Kim, B.D. Kim, and S.H. Park, "Construction of foldback intercoil DNA nanostructures and analysis of their vibrational modes", *Journal of Physical Chemistry C*, 122(5):2890-2896, 2018.
4. M.K. Choi, S. Jo, **Byung Ho Lee**, M.H. Kim, J.B. Choi, K. Kim, and M.K. Kim, "Dynamic Characteristics of a Flagellar Motor Protein Analyzed Using an Elastic Network Model", *Journal of Molecular graphics & modelling*, 78:81-87, 2017.
3. **Byung Ho Lee**, S. Seo, M.H. Kim, Y. Kim, S. Jo, M.K. Choi, H. Lee, J.B. Choi, and M.K. Kim, "Normal Mode-guided Transition Pathway Generation in Proteins", *PLOS ONE*, 12(10):e0185658, 2017.
2. S. Jo, J. Son, **Byung Ho Lee**, S.R. Dugasani, S.H. Park, and M.K. Kim, "Vibrational Characteristics of DNA Nanostructures Obtained through a Mass-weighted Chemical Elastic Network Model", *RSC Advances*, 7:47190-47195, 2017.
1. M.H. Kim, **Byung Ho Lee**, and M.K. Kim, "Robust Elastic Network Model: A General Modeling for Precise Understanding of Protein Dynamics", *Journal of Structural Biology*, 190(3):338-347. 2015.

▪ International Conferences

17. H. Kim, **Byung Ho Lee**, M.K. Kim, “Molecular Dynamics Simulation for Artificial Water Channel Design”, Mechanical Engineering Symposium 2019, Xian, May, 2019.
16. M.K. Kim, H. Kim, **Byung Ho Lee**, “An Optimal Design of Artificial Water Filtration System”, Finite Elements in Fluids 2019, Chicago, March, 2019.
15. **Byung Ho Lee**, S. Jo, H. Kim, S.H. Park, B.D. Kim, M.K. Kim, “A New DNA Inversion Mechanism: Recombination of the DNA Foldback Intercoil Structure”, Biophysical Society 63rd Annual Meeting, Baltimore, March, 2019.
14. S.W. Park, M.K. Choi, **Byung Ho Lee**, W.K. Kim, M.K. Kim, “An Accelerated Molecular Dynamics Study of Proteins Using the Bond-boost Hyperdynamics Method”, Biophysical Society 63rd Annual Meeting, Baltimore, March, 2019.
13. M.K. Kim, **Byung Ho Lee**, S. Jo, “Modeling and Simulation of DNA Foldback Intercoil Structure”, The 9th International Conference on Multiscale Materials Modeling, Osaka, October, 2018.
12. **Byung Ho Lee**, S. Jo, H. Kim, M.K. Kim, “New Homologous Recombination Pathway: The Exchange of Base Pairs of the DNA Foldback Intercoil Structure”, 1st KSCM-GACM Joint Workshop, Seoul, October, 2018.
11. S. Jo, **Byung Ho Lee**, S.H. Park, M.K. Kim, “Intrinsic Vibrational Features of Finite-size DNA 2D Ring and 3D Buckyball Structures”, DNA24, Jinan, October, 2018.
10. S.W. Park, **Byung Ho Lee**, M.K. Kim, “KOSMOS: A Computational Web Server for Biomolecular Dynamics”, The 2nd International Conference on Epigenetics and Bioengineering, San Francisco, October, 2018.
9. **Byung Ho Lee**, S. Jo, M.K. Choi, M.K. Kim, “Vibrational Characteristics of Zika Virus Based on Symmetry-constrained Elastic Network Model”, The 28th Annual Meeting of the Society for Virology, Wurzburg, March, 2018.
8. H. Kim, M.K. Choi, **Byung Ho Lee**, S. Jo, D. Kim, M.K. Kim, “Optimal Design of an Aquaporin Lipid Membrane System Using Molecular Dynamics Simulation”, Biophysical Society 62nd Annual Meeting, San Francisco, February, 2018.
7. **Byung Ho Lee**, S. Jo, B.D. Kim, S.H. Park, M.K. Kim, “Computational Analysis of DNA Homologous Recombination Pathway in a Foldback Intercoil Structure”, Biophysical Society 62nd Annual Meeting, San Francisco, February, 2018.
6. S. Jo, **Byung Ho Lee**, H. Kim, S.H. Park, M.K. Kim, “Design, Synthesis, and Validation of a DNA Foldback Intercoil Structure”, DNA23, Austin, September, 2017.
5. S. Jo, **Byung Ho Lee**, S.J. Kim, S.H. Park, M.K. Kim, “A Computational Approach to Reveal D60 Self-assembly Mechanism and Its Dynamic Features”, DNA22,

Munich, September, 2016.

4. **Byung Ho Lee**, S. Jo, J.H. Kim, S.H. Park, M.K. Kim, "Vibrational Characteristics of DNA 2D Ring and 3D Bucky Ball", 12th World Congress on Computational Mechanics, Seoul, July, 2016.
3. M. Kim, **Byung Ho Lee**, M.K. Kim, "B-factor Prediction and Conformational Pathway Generation by Robust Elastic Network Model", Coupled Problems in Science and Engineering VI, Venice, May, 2015.
2. **Byung Ho Lee**, J. Choi, M.K. Kim, "Normal Mode Guided Elastic Network Interpolation (NGENI) for Prediction of Conformational Pathway in Proteins", Mechanical Engineering Seminar, Suwa, March, 2015.
1. M.H. Kim, **Byung Ho Lee**, M.K. Kim, "Robust Elastic Network Model: Precise Prediction of Atomic Fluctuations in Protein Crystal Structures", Biophysical Society 59th Annual Meeting, Baltimore, February, 2015.