



# Woochul Kim

Professor

School of Mechanical Engineering

Yonsei University, Seoul, Republic of Korea

[woochul@yonsei.ac.kr](mailto:woochul@yonsei.ac.kr)

## Short statement:

As a mechanical engineer who can communicate with material scientists since I have been working on thermal transport in nanostructure thermoelectric materials ever since the first year in my Ph.D., 2001, I would like to contribute the International Thermoelectric Society (ITS) in the following way. During the last a few decades, there have been tremendous progress in  $zT$ . While we should be continue working on enhancing  $zT$ s of materials, I can recruit system engineers like mechanical, electrical, chemical engineers and so on, to this ITS so that, at the same time, we can put effort to produce innovative product on market out of those existing high  $zT$  materials, which would lead more attention to our thermoelectric community.

## Education:

- Ph.D., Mechanical Engineering, University of California, Berkeley, 2005  
Minors: Physics and Electrical engineering  
Advisor: Prof. Arun Majumdar
- M.S., Mechanical Engineering, Purdue University, 2001
- B.S., Mechanical Engineering, Yonsei University, Korea, 1998

## Work experience:

- Yonsei-Postech Affiliate Faculty, 2018.09. – Present  
Pohang University of Science and Technology (Postech), Department of Mechanical Engineering
- Affiliated Professor, 2023.03. – Present  
Convergence Medical Technology Center, Gangnam Severance Hospital
- Head, School of Mechanical Engineering, 2024.03. – Present
- Director, Pioneer Research Center, supported by the ministry of science & ICT, 2022.08. – Present
- Principal Investigator, Basic Research Laboratory, supported by the ministry of science & ICT, 2021.06. – Present
- Visiting Researcher, 2022.03. – 2023.02.  
Samsung Advanced Institute of Technology
- Associate Dean for Research, 2020.03. – 2022.02.  
Yonsei University, College of Engineering
- Principal Investigator, National Leading Research Laboratory, supported by the ministry of education, science & technology, 2011.09. – 2016.08.
- LG Innotek consulting professor, LG Innotek, 2015.01. – 2015.12.
- Visiting Researcher, Center for Energy Efficient Materials, University of California, Santa Barbara, 2013.01. – 2013.12.

## Awards:

- Minister's Award from the Ministry of SMEs and Startups, Commendation for Meritorious Contributors at the 2024 Seoul SME Conference, 2024.06.
- Achievement Excellence Award, Yonsei University, 2024.02., 2020.02., 2016.02, 2013.01.
- Best Engineering Professor Award, Yonsei University College of Engineering, 2023.04.
- Prime Minister's Award in Nanotechnology Research Innovation, 2017 NANO KOREA Awards, 2017.07.
- Teaching Excellence Award, Yonsei University, 2016.08., 2012.02., 2008.03.
- Netzsch KSTP TPP Award, The Korean Society of Thermophysical Properties, 2015.08.
- KSME Young Investigator Award in Thermal Engineering, The Korean Society of Mechanical Engineers, 2013.05.
- KSTP Research Excellence Award, The Korean Society of Thermophysical Properties, 2013.04.
- LG Yonam Overseas Research Professor, LG Yonam Culture Foundation, 2012.06.

## Selected publications:

1. J. Kim, S. Khan, E. K. Kim, H. Kil, B. M. Kang, H. G. Lee, J. Park, J. Y. Yoon\*, W. Kim\*, "A true continuous healthcare system for type 1 diabetes," *Nano Energy* **113**, 108553 (2023).
2. S. Acharya, J. Hwang, K. Kim, J. Kim, W. Hwang, A. Soon\*, W. Kim\*, "Quasi-random distribution of distorted nanostructures enhances thermoelectric performance of high-entropy chalcopyrite," *Nano Energy* **112**, 108493 (2023).
3. G. Park, J. Kim, S. Woo, J. Yu, S. Khan, S. K. Kim, H. Lee, S. Lee, B. Kwon, W. Kim\*, "Modeling heat transfer in humans for body heat harvesting and personal thermal management," *Applied Energy* **323**, 119609 (2022).
4. S. Khan, J. Kim, K. Roh, G. Park, W. Kim\*, "High power density of radiative-cooled compact thermoelectric generator based on body heat harvesting," *Nano Energy* **87**, 106180 (2021).
5. S. Acharya, B. Yu, J. Hwang, J. Kim, W. Kim\*, "High thermoelectric performance of ZnO by coherent phonon scattering and optimized charge transport," *Advanced Functional Materials* **31**, 2105008 (2021).
6. H. Kim, G. Park, S. Park, W. Kim\*, "Strategies for manipulating phonon transport in solids," *ACS Nano* **15**, 2182 (2021).
7. J. Kim, S. Khan, P. Wu, S. Park, H. Park, C. Yu\*, W. Kim\*, "Self-charging wearables for continuous health monitoring," *Nano Energy* **79**, 105419 (2021).
8. H. Wang, J. Bahk, C. Kang, J. Hwang, K. Kim, J. Kim, P. Burke, J. Bowers, A. Gossard, A. Shakouri, W. Kim\*, "Right sizes of nano- and microstructures for high performance and rigid bulk thermoelectrics," *Proceedings of the National Academy of Sciences of the United States of America* **111**, 10949 (2014)
9. W. Kim, R. Wang, A. Majumdar\*, "Nanostructuring expands thermal limits," *Nano Today* **2**, 40 (2007).
10. W. Kim, J. Zide, A. Gossard, D. Klenov, S. Stemmer, A. Shakouri, A. Majumdar\*, "Thermal conductivity reduction and thermoelectric figure of merit increase by embedding nanoparticles in crystalline semiconductors," *Physical Review Letters* **96**, 045901 (2006).
11. W. Kim, A. Majumdar\*, "Phonon scattering cross section of polydispersed spherical nanoparticles," *Journal of Applied Physics* **99**, 084306 (2006).