



## Triboelectric nanogenerator - Energy harvesting and delivery for selfpowered electronics

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## Abstract

Energy harvesting systems based on triboelectric nanomaterials are in great demand, as they can provide routes for the development of selfpowered devices which are highly flexible, stretchable, mechanically durable and can be used in a wide range of applications. Our recent research interest mainly focuses on the fabrication of high-performance triboelectric nanogenerators (TENGs) based on various kinds of nanomaterials. Flexible TENGs exhibit good performances and are easy to integrate which make it the perfect candidate for many applications and therefore crucial to develop. In this presentation, I firstly introduce the fundamentals and possible device applications of TENGs, including their basic operation modes. Then the different improvement parameters will be discussed. As main topics, I will present a couple of recent achievements regarding highly stretchable transparent flexible TENGs, textile-based wearable TENGs, highly robust and efficient TENGs with multifunctional materials, etc. The recent research and design efforts for enhancing power generation performance of TENGs to realize self powering of wearable and body-implanted electronics will also be discussed in this talk. Finally I am going to introduce a 2D materials-based tribotronics for possible future application toward tactile sensors, robots, security, human-machine interfaces, etc.

## Biography

Sang-Woo Kim is a full professor, SKKU Fellow (SKKU distinguished professor) in the school of advanced materials science & engineering in sungkyunkwan university, korea. He is a referee for numerous prestigious journals including nature, sciene, nature materials, nature nanotechnology, nature communications, advanced materials, energy & environmental science, nano letters, advanced energy materials, ACS nano, nano energy, advanced functional materials, angewante chemi international edition, JACS, advanced electron. materials, etc. Recently he has been awarded materials challenges in alternative & renewable energy (MCARE) 2016 Award (ACerS-KIChE) and distinguished lecture (2016), The Republic of Korea president's award for scientific excellence (2015), The award of the ministry of science, ICT & future planning (National Top Research, 2014, 2015), Top 50 national basic research award (2014), National Top 100 research award (2015, 2012), etc.



Webianar on Nanomaterials | August 28-29, 2020

Citation: Sang-Woo Kim, Triboelectric nanogenerator - Energy harvesting and delivery for self-powered electronics, Webinar on Nanomaterials, August 28-29, page 07