

**When:** Friday 16:15 – 17:05, September 4, 2020

**Where:** <https://tamu.zoom.us/j/514754727>

**Speaker:** **Woo Seok Kim**

Ph.D. Student in Prof. Sung-II Park's Group  
Department of Electrical and Computer Engineering  
Texas A&M University



**Title:** Organ-specific, multimodal, wireless optoelectronics for high-throughput phenotyping of peripheral neural pathways

**Abstract:** The vagus nerve supports diverse autonomic functions and behaviors important for health and survival. To understand how specific components of the vagus contribute to behaviors and long-term physiological effects, it is critical to modulate their activity with anatomical specificity in awake, freely behaving conditions using reliable methods. Here, we introduce an organ-specific scalable, multimodal, wireless optoelectronic device for precise and chronic optogenetic manipulations in vivo. When combined with an advanced, coil-antenna system and a multiplexing strategy for powering 8 individual homecages using a single RF transmitter, the proposed wireless telemetry enables low cost, high-throughput, and precise functional mapping of peripheral neural circuits, including long-term behavioral and physiological measurements. Deployment of these technologies revealed an unexpected role for stomach, non-stretch vagal sensory fibers in suppressing appetite and demonstrated the durability of the miniature wireless device inside harsh gastric conditions.

**Bio:**

Woo Seok Kim received Bachelor of Science in Computer Science and Master of Science in Electrical and Electronic Engineering from Korea University, South Korea, in 2011 and 2013, respectively. He is currently pursuing a Ph.D. at Texas A&M University, College Station, TX, USA since 2015. From 2013 to 2015, he was a software engineer at Research and Development Center, KT (Korea Telecom) Inc., Seoul, S. Korea. His current research interests include bioelectronics system development and advanced algorithm to reconstruct and classify the neural signals.