SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
Faculty of Engineering
Website: https://www.eng.nus.edu.sg/ece/

Area: Integrated Circuits & Embedded Systems

Host: Assoc Prof. Jerald Yoo

TOPIC	:	**A 0.14 pJ/conversion Fully Energy-Autonomous Temperature-To-Time Converter for Biomedical Applications**
SPEAKER	:	**Ms Joanne Tan Si Ying** **Graduate student, ECE Dept, NUS**
DATE	:	**Wednesday, 25 November 2020**
TIME	:	**11.00AM – 11.30AM**
WEBINAR	:	**Join Zoom Meeting** **https://nus-sg.zoom.us/j/82568828058?pwd=V3hzOHdmVzl5TTNQZ0JQRnVZV0VRdz09** **Meeting ID: 825 6882 8058** **Password: 111111**

ABSTRACT

We present a fully energy-autonomous temperature-to-time converter (TTC) for biomedical applications. This is the first work in- literature to power the entire converter purely by a Triboelectric Energy harvester (TEG). The Dynamic Leakage Suppression Full-Bridge Rectifier (DLS-FBR) reduces reverse leakage current to 1/100, which enables the TEG operated by human motion at <1 Hz as a sole power source; once the harvested voltage reaches 0.6 V, the one-shot TTC converts the temperature into pulse width, measuring a temperature range of 15°C to 45°C. The TTC in 0.18 um 1P6M CMOS consumes 0.14 pJ/ conversion while powered up purely by a TEG, achieving energy autonomous operation.

BIOGRAPHY

Joanne Tan Si Ying received the B. Eng. and M. Eng. degree in electrical engineering from the National University of Singapore (NUS), Singapore, in 2018 and 2020 respectively. She is currently a Ph. D student with the Department of Electrical and Computer Engineering, NUS. Her current research interest focuses on low power temperature sensing systems.

https://www.eng.nus.edu.sg/ece/highlights/events/