

SINGAPORE NATIONAL ACADEMY OF SCIENCE YOUNG SCIENTIST AWARDS 2020

PHYSICAL, INFORMATION & ENGINEERING SCIENCES CATEGORY

Dr John S Y Ho

Assistant Professor, Department of Electrical and Computer Engineering,
National University of Singapore (NUS)
Principal Investigator, Institute for Health Innovation and Technology, NUS

“For his research in developing innovative wireless healthcare technologies”

Dr Ho's research seeks to develop wireless technologies that address important challenges in medicine and healthcare. His research pursues fundamental advances in electromagnetics and bioelectronics, as well as novel approaches in device engineering and system integration for translational applications. Working closely with life scientists and clinicians, his research aims to apply innovative technologies to demonstrate new approaches to study, diagnose, and treat disease. Some examples of devices developed by Dr Ho and his collaborators include micro-implants that deliver light for targeted cancer therapy, and smart clothing for daily health monitoring purposes.

In the earlier part of his career, Dr Ho's research focused on wireless power transfer to bioelectronic devices. With his team members, he proposed a theoretical method to deliver power efficiently to implanted micro-devices, and led its experimental validation. This work became the basis for a minimally invasive neuromodulation device that has since been implanted in patients. Since joining the National University of Singapore (NUS) in 2015, he has led a highly interdisciplinary group supported by significant grants from the National Research Foundation (NRF) and Ministry of Education, to develop advanced wireless powering, sensing, and communication technologies for healthcare applications. During the Singapore COVID-19 circuit breaker in 2020, he led the deployment of a wireless remote monitoring system in a worker dormitory.

He has published in leading scientific journals, including Nature Biomedical Engineering, Nature Electronics, Nature Communications, PNAS, and Physical Review Letters. He holds three granted and four pending patents, three of which have been licensed to medical device companies. He has been recognised by many awards, including the NRF Fellowship, NUS Young Investigator Award, MIT Innovator Under 35 Asia, and Forbes 30 Under 30 Asia.