30 June 2025

Kanesa D

NTU Singapore and PureFize Technologies Unveil the EcoLoc Device

Singapore's LUMINOUS! Centre of Excellence at Nanyang Technological University (NTU Singapore) has partnered with PureFize Technologies to develop EcoLoc, a cutting-edge portable device that enhances food safety and extends freshness in refrigeration environments. This innovation spotlights a powerful new UV-emitting chip designed to combat microbial contamination directly within cold storage units.

The proprietary UV chip, created through a process known as cathodoluminescence, features a zinc oxide cathode and a specially coated anode. When voltage is applied, electrons are released from the cathode and accelerated within a vacuum toward the anode. Upon impact, the anode emits a broad-spectrum UV light that spans wavelengths, peaking at 262 nm. This includes UVC, UVB, and UVA regions, with each playing a unique role in microbial defense.

UVC light effectively disrupts the DNA of bacteria and viruses, while UVB and UVA penetrate biofilms and attack proteins and lipids, making EcoLoc a multi-target solution against foodborne pathogens. Operating efficiently in extreme conditions, the chip also offers instant on/off capability, enabling precise, energy-efficient disinfection when needed.

Image Credit:

PureFize Technologies

https://www.cleanthesky.com/innovation/ntu-singapore