

Imprinted expanded gate Field-Effect transistor for pesticide detection

Wednesday, May 20, 2015 3:00 PM (15 minutes)

An extended gate field-effect transistor (EGFET) is a device that can be applied to chemical sensing with the benefit of low cost electrodes. A poly(methylmethacrylate) (PMMA)-imprinted film has been applied to fabricate on indium tin oxide glass as a gate electrode for an EGFET sensor for a specific detection of carbaryl sample. The imprinted film was obtained by mixing PMMA and carbaryl in dichloromethane and drop-cast on the EGFET electrode. Prior to measurements of carbaryl samples, the film was thoroughly rinsed with a low content of ethanol aqueous solution to remove carbaryl from the film. The carbaryl detection by the imprinted EGFET sensor was compared with that of the non-imprinted EGFET. The sensitivity, concentration range and specificity of the sensors were investigated. The imprinted EGFET has a high potential for low cost fabrication of easy-to-use pesticide sensors.

Primary authors: Ms LEEPHENG, Piyawan (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand); Ms THONGBOON, Sirikan (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand)

Co-authors: Dr THANACHAYANONT, Chanchana (National Metal and Materials Technology Center, National Science and Technology Development Agency, Pathumthani, Thailand); Dr HOUNGKAMHANG, Nongluck (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand); Dr SRITONGKHAM, Pornpimol (Biomedical Engineering, Faculty of Engineering, Mahidol University, 999 Phuttamonthon4 Road, Salaya, Nakhon Pathom 73170, Thailand); Dr PRATONTEP, Sirapat (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand); Mr SASIPONGPANA, Suppanat (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand); Mr RAYANASUKHA, Yossawat (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand)

Presenters: Ms LEEPHENG, Piyawan (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand); Ms THONGBOON, Sirikan (College of Nanotechnology, King Mongkut's Institute of Technology Ladkrabang, 1 Chalongkrung Rd., Ladkrabang, Bangkok 10520, Thailand)

Session Classification: Special Session: Pesticide Biosensor (Sponsored by MTEC)

Track Classification: Atomic Physics, Quantum Physics, Molecular and Chemical Physics