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キーワード

electrochemical biosensors / organic solar cells / nanomaterials

分野等

化学

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職名

特命助教

学位

博士(工学)

研究分野

Nanomaterials play an important role in the development of a variety of nanotechnologies which expected to benefit society in the world.

Biosensors, analytical devices that use for the detection of chemical and biological substances, have been extensively applied for many fields such as medical field including general healthcare monitoring and disease diagnosis, pharmaceutical field, environmental and industrial monitoring, food safety, and so on.

Photovoltaic device or solar cell, a device that converts sunlight directly into electricity, is one of the promising candidates for renewable energy in the future.

Based on my research, we focus on the synthesis of new nanocomposites or plasmonic nanostructures in order to apply for the fabrication of biosensors and photovoltaic devices. Also, the incorporation of plasmonic grating-nanostructures to enhance efficiencies of the photo-electrochemical sensor is investigated.

特別設備

Potentiostat electrochemical instrument

Atomic Force Microscope (AFM)

Gas chromatography-mass spectrometry (GC-MS)

企業との連携実績

2019-2020 Regional Medical Sciences Center 1 Chiang Mai, Department of medical sciences, Ministry of public health, Thailand (research assistant 3 months)

2017 Campus France of Cergy-pontoise University, France “Development of multi-walled carbon nanotubes/silver nanocomposite for electrochemical supercapacitors” (2 months)

2015&2016 National Nanotechnology Center (Nanotec), National Science and Technology Development Agency (NSTDA), Thailand “Synthesis of nanomaterials for enhancement of electrochemical biosensors” (6 months)

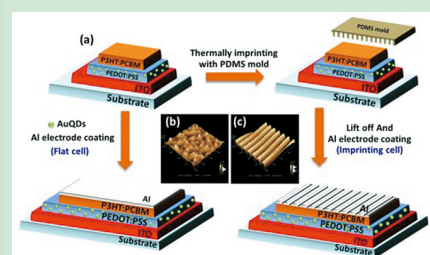


Fig.1 Developed OSCs with plasmonic grating nanostructure [3].

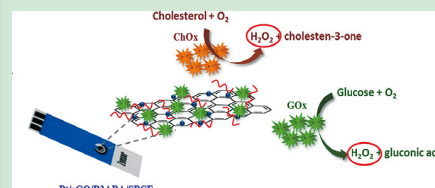


Fig.2 Developed glucose and cholesterol biosensors [5].

References

- [1] S. Phetsang, et al. Scientific Reports, **11**, 2021, 9302.
- [2] S. Phetsang, et al. Frontiers in chemistry, **9**, 2021, 671173.
- [3] S. Phetsang, et al. Nanoscale Adv. **2**, 2020, 2950-2957.
- [4] S. Phetsang, et al. Nanoscale Adv. **1**, 2019, 792-798.
- [5] S. Phetsang, et al. Bioelectrochemistry, **127**, 2019, 125-135.