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Synthesis of antibacterial nanofibers composite from poly butylene succinate and copper nanoparticle as a filter layer in a surgical mask

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The outbreak of COVID-19 affects a daily life of human beings so protective equipment such as surgical masks is become essential. In this research, the development of filter layers for surgical masks from poly butylene saccinate (PBS) fiber nanocomposite which is a biodegrable polymer and copper nanoparticle (Cu NPs) that can inhibit microorganisms and can be synthesized from organic substances by electrospin technique, The spinning condition at a potential difference of 20 kV and a speed of 40 ml/hour was used in nanofiber fabrication. By using a co-solvent system between chloroform and dichloromethane, a composite solution was prepared. From scanning electron microscopy technique, it was found that the nanofiber size of polybutylene saccinate was 750 nm, However, when comparing with the size of PBS composite nanofibers were not significantly different. Further, the antimicrobial inhibition of nanocomposite was performed using 0.1% with CuNPs. Then, physical properties such as absorbance properties will be studied by UV-visible spectroscopy. Mechanical properties of nanofibers will be test by UTM. Additionally, the pressure of air passing through the filter layer will be test in order investigate its application in surgical mask.

Author: SUWANNACHOT, Jaggawut

Presenter: SUWANNACHOT, Jaggawut

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