## Development of biodegradable hybrid polymer film for detection of formaldehyde in seafood products

## ABSTRACT

Despite the enormous accomplishments of current sensing methods, portable and sensitive sensing materials remains a challenging issue. Herein, a novel of a biodegradable hybrid polymer film was developed for quantitative analysis of formaldehyde seafood, including Lutjanus erythropterus, Euthynnus affinis, Caranx indicus, and Penaeus monodon at Sabah, Malaysia. In this research, starch and chitosan were introduced as the substrate to entrap Nash colorimetric reagents for the fabrication of biodegradable films for detection of formaldehyde. Under optimal conditions, excellent linearity (R2 = 0.9918) of colorimetric response was obtained in formaldehyde concentration ranges of 100 to 0 ppm, with a limit of detection and quantification calculated to be 5 and 16.8 ppm, respectively. The developed film was successfully applied to the identification and quantification of formaldehyde in four different seafood samples with satisfactory recoveries, and RSD values obtained range between 98.80%–104.65% and 0.12%–1.21%, respectively. The present research demonstrated short response time (within 5 min) that provides reliable methods for application in biosensing, which exhibited the advantage of this well-performing platform for application in the food, environmental, and medical disciplines sensing.