

## **Investigation on oil absorption and microstructural properties of polyethylene composites reinforced with post-agricultural waste fillers**

### **ABSTRACT**

Conventional plastic made from polyethylene (PE) is not able to absorb excess oil from the fried food due to its nature to resist water and oil. As a result, oil inside fried food plastic packaging will be accumulated and will affect the freshness and shelf life of the product. To address this issue, polyethylene incorporated post-agricultural waste filler which is rice husk (RH) and rice husk ash (RHA) is produced. Five levels of filler loading which are 10, 15, 20, 25, and 30 in weight percent were incorporated into the PE to produce RH-PE and RHA-PE composites. Tests were performed to evaluate the oil absorption and microstructural properties of the composites. The results showed that the addition of fillers at any loading percentages resulted in significant improvement on the oil absorption of the composites as compared to control sample which is PE. The RH-PE and RHA-PE composites with 25% of fillers were found to possess the best oil absorption property as compared to other compositions. An increase in the loading of fillers would lead to some large agglomeration, high amount of spaces between rice husk and polyethylene and subsequently allow more oil to be absorbed into the composite. It proved that R RH-PE and RHA-PE composites with optimum composition have a great potential to be a good oil absorbent material.

**Keyword:** Polyethylene composite; Rice husk; Rice husk ash; Agricultural waste; Oil absorption