

Inventors:  
 Dr. Azlin Fazlina Binti Osman  
 Tew Wei Hong  
 Mohd. Saifullah Bin Hassan

# Tough and Biostable EVA-Clay based Nanocomposites For Medical Applications

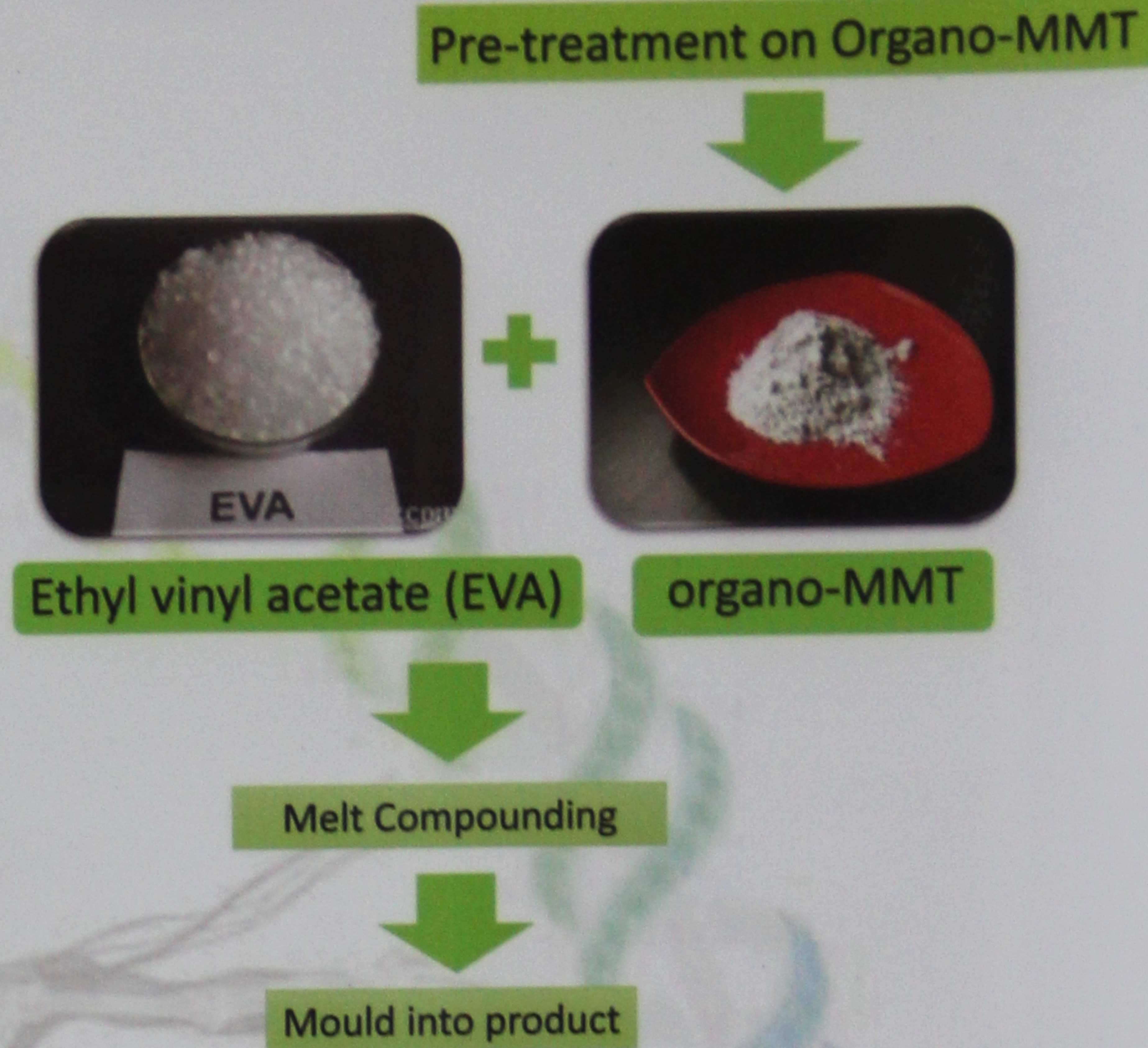


Centre of Excellent Geopolymer & Green Technology,  
 School of Material Engineering  
 Universiti Malaysia Perlis (UniMAP)  
 02600 Jejawi, Perlis, Malaysia  
 Email: [azlin@unimap.edu.my](mailto:azlin@unimap.edu.my)

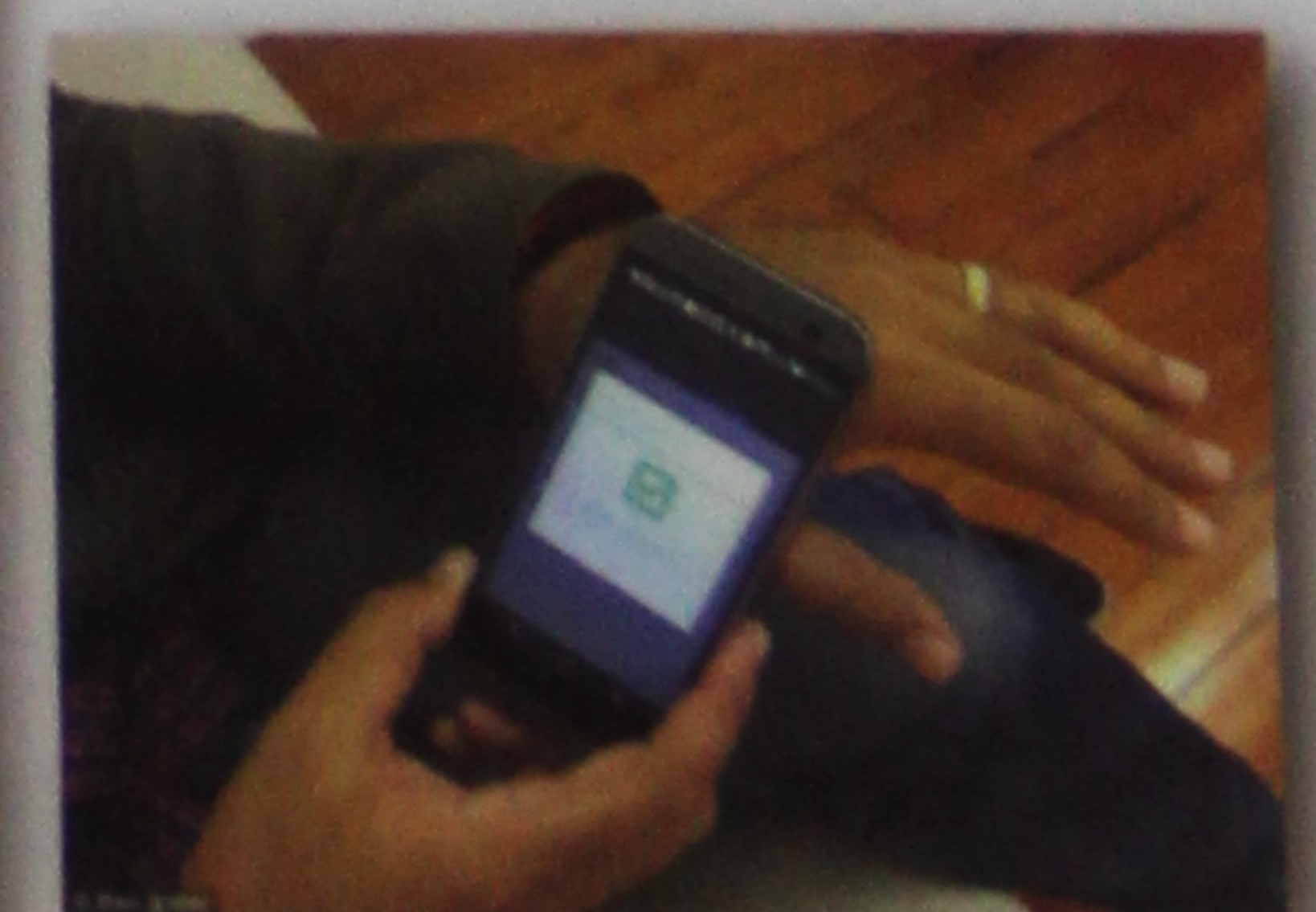
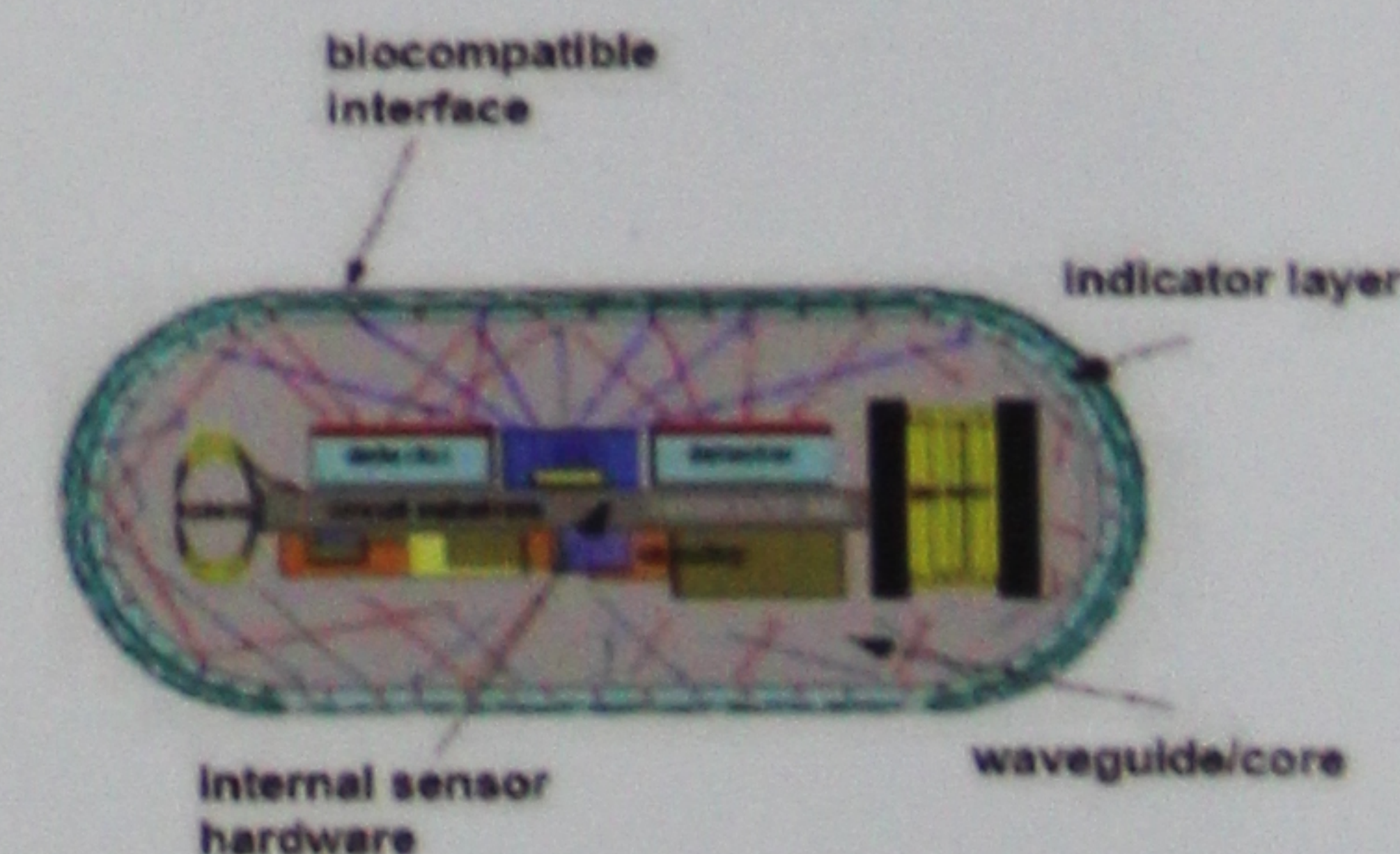
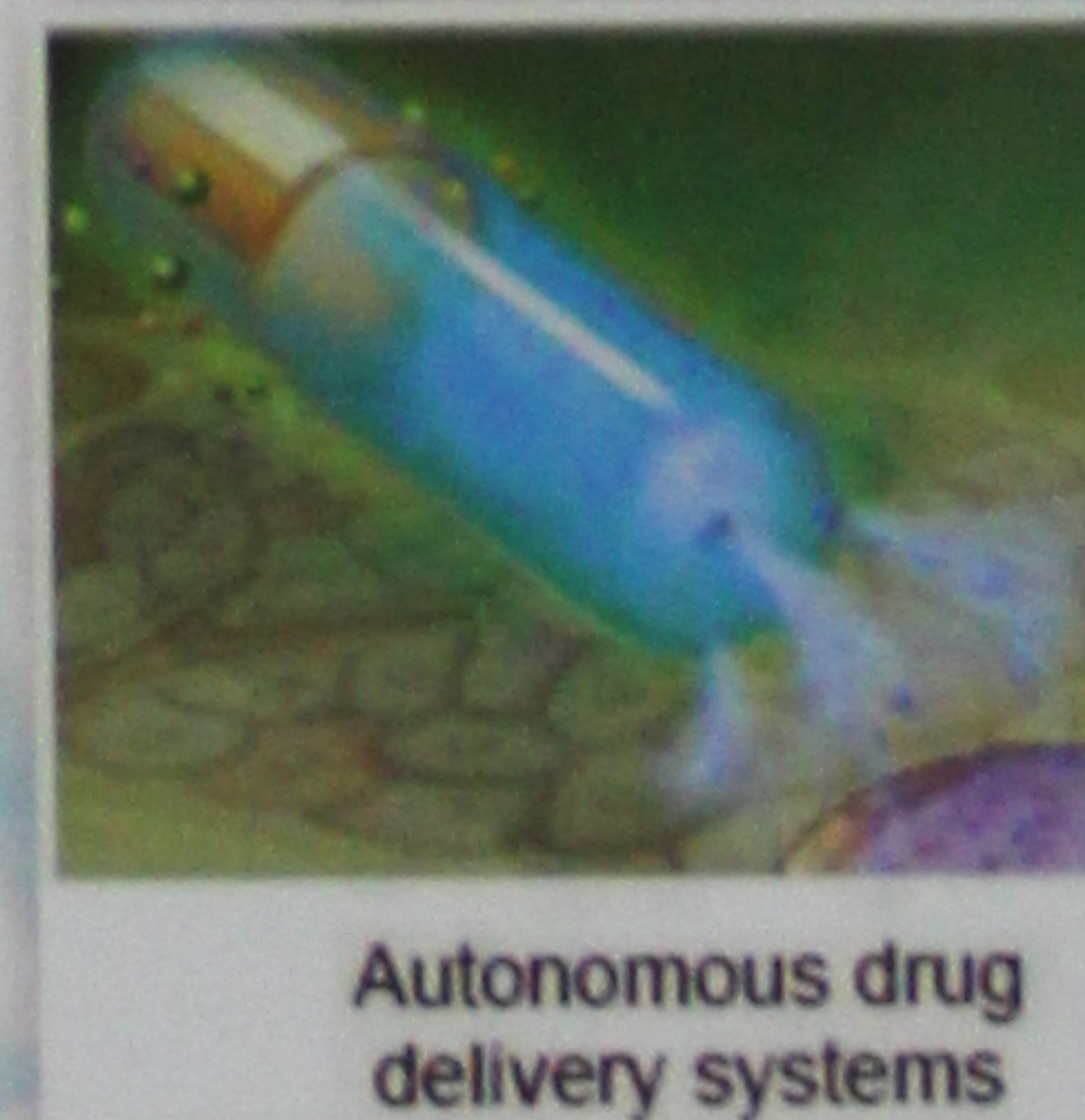
## INTRODUCTION

Nowadays, there are constant demand for cost-effective and innovative biomedical materials for both medical devices and packaging purpose. However, a problematic issue in the medical field is the limited number of existing biostable, biocompatible and tough materials that offer versatility, exceptional performance, and meet industrial nature. This could probably due to the stringent requirements; properties, design, processing and availability constraints. The increasing research and development of quality plastic materials for biomedical applications is therefore, necessary. This is believed to be an area where innovation in new medical nanocomposite materials is needed. In order to be useful for biomedical device applications, the most important material property is to withstand repeat sterilization processes that may involve gamma irradiation, high temperatures, electron beams, and oxidative and hydrolytic treatments. In addition, a material must show excellent chemical resistance, toughness, clarity, and color stability in order to be effectively applied to biomedical applications. Meanwhile, for the medical packaging purpose, the material should withstand prolonged mechanical stress and impact forces during transportation and storage in order to protect package contents from physical damage. In this current project, we produce and investigate ethyl vinyl acetate (EVA) nanocomposites incorporating montmorillonite (MMT) for use in a broad range of biomedical applications including implantable devices.

## MANUFACTURING PROCESS



## POTENTIAL APPLICATIONS



## NOVELTY



## KEY PUBLICATION

Osman, Azlin F., et al. (2015) "In vitro biostability and biocompatibility of ethyl vinyl acetate (EVA) nanocomposites for biomedical applications." *RSC Advances*, 5 (40) p. 31485-31495.

Implantable microchip medical information carrier