

## **Oil Extraction from Oil Palm Empty Fruit Bunches with Crystallization Technique**

### **ABSTRACT**

Oil palm empty fruit bunches (EFB) are the common by-product of palm oil mills as in 2017 approximately 87.721 million tons of EFB were produced. This abundance of EFB causes several problems, including pollution and pest infestation, which have an impact on the well-being of the environment and humanity. Due to this, research on EFB has been conducted, demonstrating its capability to be a sustainable resource for derived products, such as bio-oil and EFB fibre as composite filler. Research shows that processed EFB fibre contains 2-3% of residual oil but current oil extraction methods require the use of either high temperature and/or high pressure. Existing methods require high energy consumption and are unable to extract all residual oil within EFB. Therefore, a new EFB oil extraction technique is proposed, based on the fundamental theory of crystallization as a separation method. This technique was able to achieve reductions of 74.45 and 30.03% in the oil yield from processed EFB using liquid nitrogen and standard refrigeration system as crystallization media, respectively.