

## **Polishing of POME by *Chlorella* sp. in suspended and immobilized system**

### **Abstract**

The effect of using suspended and immobilized growth of *Chlorella* sp. to treat POME was studied. Cotton and nylon ropes were used as the immobilization material in a rotating microalgae biofilm reactor. The result showed that POME treated in suspended growth system was able to remove 81.9% and 55.5% of the total nitrogen (TN) and total phosphorus (TP) respectively. Whereas the immobilized system showed lower removal of 77.22% and 53.02% for TN and TP. Lower performance of immobilized microalgae is due to the limited light penetration and supply of CO<sub>2</sub> inside the immobilization materials. The rotating microalgae biofilm reactor was able to reduce the biochemical oxygen demand (BOD) to 90 mg/L and chemical oxygen demand (COD) to 720 mg/L. Higher BOD and COD reading were obtained in suspended growth due to the presence of small number of microalgae cell in the samples. This study shows that suspended growth system is able to remove higher percentages of nitrogen and phosphorus. However, an efficient separation method such as membrane filtration is required to harvest the cultivated microalgae cell to avoid organic matter release into water bodies.