

## **EFFECT OF TIME ON THE RATE OF CRYSTALLIZATION**

### **AIM:**

To study the effect of time on the rate of crystallization.

### **REQUIREMENTS:**

- ✓ Beakers
- ✓ Slide
- ✓ Cover slip
- ✓ Microscope

### **PROCEDURE:**

- Refined bleached and deodorized palm oil are placed in a beaker which was initially heated in a thermally controlled water bath for 30 minutes at 70°C to totally melt the oil.
- The temperature was then reduced to 30°C within one hour followed by reducing to crystallization temperature of 14 or 22°C within 30 minutes.
- Once the oil reached the desired temperature (14 or 22°C), it was allowed to crystallize until 90 minutes where the analyses were made at 5,15,30,60 and 90 minutes to obtain the morphology of the crystals.
- The beaker content was constantly stirred at 90 rpm throughout the process using a stirring motor attached with two blades paddle propeller
- Samples of slurries were withdrawn at 5,15,30,60 and 90 minutes of crystallization and placed onto a slide which was then covered with a cover slip.
- Photograph of the crystals were taken at the magnification of 200x.
- The lengths of four longest dimensions of each crystal were recorded and an average of at least six crystals was measured during each observation.

**Observation table:**

<b>Time (min)</b>	<b>Crystal Size (<math>\mu\text{m}</math>)</b>
<b>5</b>	
<b>15</b>	
<b>30</b>	
<b>60</b>	
<b>90</b>	

**Report:**

Rate of crystallization of palm oil at the end of 90 minutes is =  $\mu\text{m}$ .