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Aim :-

To determine the centrifugal effect during the separation of emulsion of different ~~of~~ RPM.

Reference :-

Requirement :-

- Centrifuge (1)
- Mortar and Pestle
- Beaker
- Measuring cylinder
- Glass rod
- Castor oil
- Acacia
- Water.

Theory :-

Centrifugation is based on the well known theory (of centrifugal force) that an object which is rotated about a centre point at a constant radial distance from the point is acted upon by a force. It is measure in terms of the number of times the centrifugal force is greater than that of

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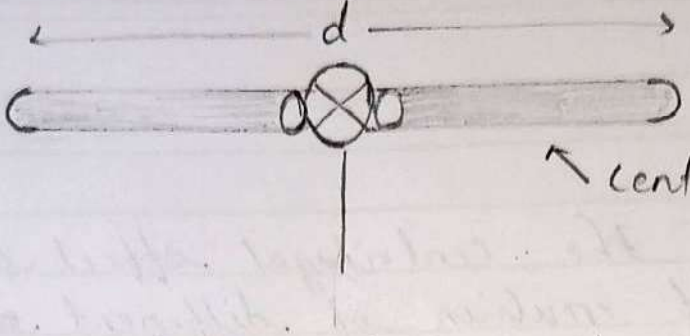

Fig:- Determination of diameter of rotation

Observation and calculation.

S. No	RPM (s^{-1})	Diameter of rotation (m)	Centrifugal Effect (m/s^2)	Volume of oil separated (ml)
Big Centrifuge	500 1000 2000 3000 5000			
Small Centrifuge	500 1000 2000 3000 5000			

Note :- Volume of oil is separated is the average volume of oil present in all the tube of the centrifuge after each operation.

gravitational force. The centrifugal effect can be determined with the help of the the eqn.

$$C.E. = 2.012 n^2 d$$

Where,

n = Number / speed of rotation (S^{-1}).
d = diameter of the rotation (m).

When the speed of rotation increases then C.E. increases and when the diameter of the rotation increases, C.E. increases.

In the Present experiment, we are demonstrating how the C.E. effect changes with diameter and speed of rotation of the centrifuge.

1. Preparation of Emulsion

i) Emulsion is prepared with the help of ~~motor and~~ Mortar and pestle.

ii) The standard formula for the emulsion is

Castor oil - 37.5 ml
Acacia - 10.9 gm
Water to produce - 100 ml.

iii) Transfer the prepared emulsion into a clean beaker.

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iv) Select and thoroughly clean two ~~set~~ centrifuges. (Big and small).

v) Find out the diameter of rotation for both the centrifuges. (from the centre to the tip of the tube when placed in the horizontal direction).

vi) Fill equal amount of the emulsion in the ~~set~~ centrifugal tubes of both the ~~set~~ centrifuges. (The volume can be selected according to the capacity of the tube. (normally 15-50 ml).

vii) Arrange the samples properly in the centrifuge to avoid the accidental breakage during operation.

viii) Allow to operate the centrifuges at 500 RPM for 10 min.

ix) Stop the centrifuges and wait ~~un~~till the rotation stops.

x) Open the lid and take out the tubes.

xi) Find out the amount of the oil separated.

xii) Calculate the C.E. using the eqⁿ.

xiii) ~~Pour~~ Pour out the content present in the centrifugal tubes and clean it properly.

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xiv) Repeat the steps 6 and 7.

xv) Allow to rotate the centrifuge at 1000 RPM for 10min.

xvi) Calculate the amount of the oil separated and C.E.

xvii) The ~~values are tabulated~~. some steps (6, 7, 9-12) is repeated for RPM 2000, 3000, 5000.

xviii) The values are tabulated.

xix) Graphs are drawn as shown in the model graphs.

Result:-

~~Performed the~~
The C.E. separtion of emulsion at different speed of rotation has been successfully performed in the laboratory.

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