

Measuring the Length of a Molecule Demonstration Worksheet

Data

Volume oleic acid in one drop = _____

Diameter of oleic acid circle :

Trial 1 = _____ Trial 2 = _____ Trial 3 = _____

Radius of oleic acid circle:

Trial 1 = _____ Trial 2 = _____ Trial 3 = _____

Average radius = _____

Discussion Questions

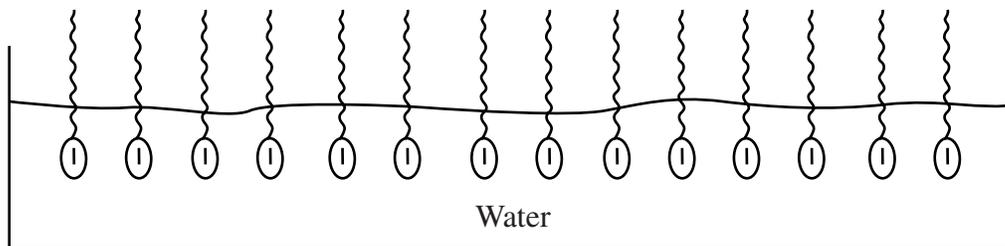
- Using the following formula for the volume of a cylinder, solve for h , the height of a cylinder.

$$V = \pi r^2 h$$

V = volume of oleic acid in one drop

r = average radius of the circle

- Oleic acid does not dissolve in water, but when it is placed in a polar solvent such as water, it forms a single layer of oleic acid molecules, with a polar “head” that points directly downward and a nonpolar “tail” that sticks straight up. See Figure 1.



This monolayer spreads out in a rough circle across the surface of the water. With this information, why do you think we use the height of a cylinder to determine the length of an oleic acid molecule?