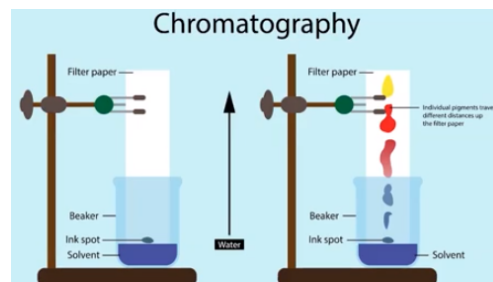


AP Chemistry Daily Videos

3.9 Separation of Solutions and Mixtures Chromatography

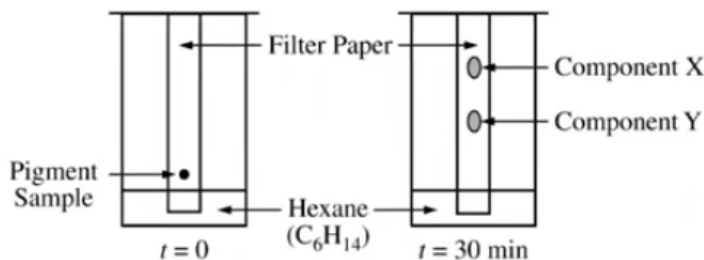
Daily Video #1

1. Describe how chromatography is able to separate solutions based on IMFs



2. Pause the video at 2:22 and attempt the problem, then evaluate how you did and identify any errors

In a paper chromatography experiment, a sample of a pigment is separated into two components, X and Y, as shown in the figure below. The surface of the paper is moderately polar. What can be concluded about X and Y based on the experimental results?



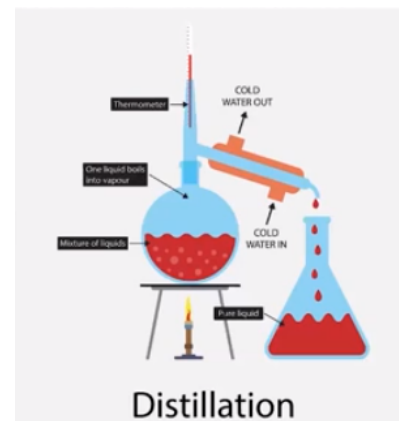
- A X has a larger molar mass than Y does.
- B Y has a larger molar mass than X does.
- C X is more polar than Y.
- D Y is more polar than X.

3. Pause the video at 4:18 and attempt the problem, then evaluate how you did and identify any errors

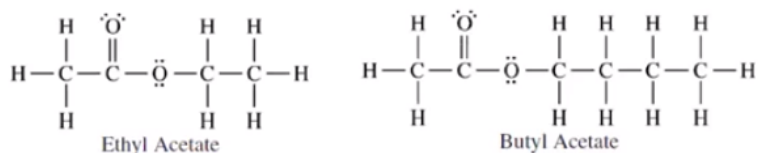
A student obtains a sample of purple food dye which is known to contain both red and blue dyes dissolved in a solution of isopropyl alcohol. Sketch an appropriate lab setup to use in order for the student to separate the two dyes. If the blue dye is less polar than the red dye, which would we expect to travel the farthest on the nonpolar stationary phase?

Daily Video #2

1. Describe how distillation is able to separate solutions based on IMFs



2. Pause the video at 2:01 and attempt the problem, then evaluate how you did and identify any errors



A mixture containing equal numbers of moles of ethyl acetate and butyl acetate was separated using distillation. Based on the diagrams shown above, which of the following identifies the substance that would be initially present in higher concentration in the distillate and correctly explains why that occurs?

3. Pause the video at 2:53 and attempt the problem, then evaluate how you did and identify any errors

A mixture containing equal numbers of moles of ethyl acetate and butyl acetate was separated using distillation. Based on the diagrams shown above, which of the following identifies the substance that would be initially present in higher concentration in the distillate and correctly explains why that occurs?

- A Ethyl acetate, because it has fewer C-C bonds to break
- B Ethyl acetate, because it has a shorter carbon chain and weaker London dispersion forces
- C Butyl acetate, because it has more C-C bonds to break
- D Butyl acetate, because it has a longer carbon chain and weaker dipole-dipole attractions

4. Pause the video at 3:37 and attempt the problem, then evaluate how you did and identify any errors

Compound	Formula	Boiling Point °C	Density g/mL
butanol	C ₄ H ₉ OH	117.7	0.8098
pentanol	C ₅ H ₁₁ OH	131.6	0.8247

A student observes that a mixture of butanol and pentanol are miscible. Using information in the table above, what technique could the student use to separate the two components of the mixture? Justify your answer.