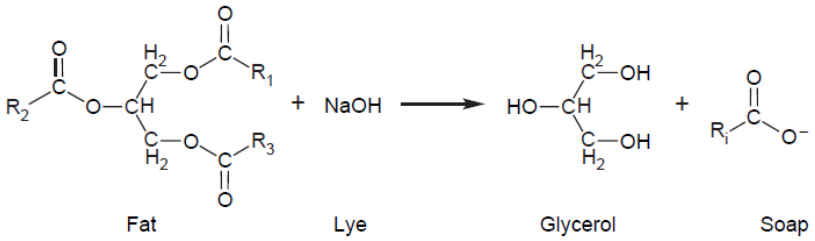
Micelles to the Rescue: NAME: _____

How Soap Transports Debris

Laboratory Procedure for Day One – Soap Making

Materials:

- Crisco – 20 g
- NaOH (aq) – 6M, 10 mL
- Beaker – 100 mL
- Styrofoam cup
- Graduated cylinder – 25 mL
- Glass stirring rod
- Hot plate
- Two thermometers
- Universal pH indicator paper
- Dropper



Safety Precautions:

Splash-proof goggles must be worn during this procedure. A lab apron and protective gloves are to be worn as well. NaOH is extremely corrosive and must not come into contact with your skin or eyes. If it gets in your eyes immediately use the emergency eye-wash station. If it comes in contact with your skin, thoroughly rinse affected area with cold water. As always, think three moves ahead when working in the lab.

Procedure:

- ☐ Tare the 100 mL beaker and measure 20 g of fat directly in the beaker.
- ☐ Melt fat (in beaker) on hot plate – medium setting,
- ☐ Once fully melted allow it to cool to approximately 45°C and pour into Styrofoam cup
- ☐ Measure 10 mL of 6M NaOH with a graduated cylinder and pour it into a 100 mL beaker. Heat the solution gently on a hot-plate until it is the roughly the same temperature as the liquid fat (Crisco) at 45°C. Don't overheat or boil the solution! The temperatures of the liquid fat and the NaOH should be with approximately 5°C of each other when you mix them.
- ☐ Slowly pour the NaOH solution into the liquid fat while stirring slowly and smoothly with your glass stirring rod.
- ☐ *Stir slowly and smoothly for 15 minutes in a figure eight motion.* The mixture should thicken to the consistency of cold honey. If it hasn't thickened in 15 minutes, then let it cool for a few minutes then begin to stir again.
- ☐ Dab a strip of litmus paper on the surface of the mixture to check the pH level. Compare the color on the litmus paper to a pH color chart. State the pH here: _____
- ☐ Leave the thickened mixture in the Styrofoam cup until we use it in our micelle lab (a few weeks from now). The Styrofoam cup will act as a mold for your soap.

Reference: JChemEd.chem.wisc.edu • Vol. 76 No. 2 February 1999 • Journal of Chemical Education

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Post Lab:

1. **What were the safely precautions you took when performing this lab?**

2. **Describe what happened to the mixture of liquid fat and sodium hydroxide after you stirred it for 15 minutes.**

3. **Describe the mistakes you made in this lab and why you made them.**

4. **Why do we need to let the soap sit for a few weeks before using it?**

5. **Describe the procedure for cleaning glassware in the lab.**