CaYPT
Canadian Young Physicists' Tournament

MAKING SOUP SOLUTION

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Abstract

In this SOP, the procedure of making soap solutions using store bought ingredients is documented. Compared to commercially made bubble solutions, lab made solutions have well known content adn thus allow for modification of the formula for exploration of a wide parameter space.

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[1] *Footnote 1 etc.*
[2] *Footnote 2 etc.*

1 Content

1.1 Ingredients

1. 400 mL tap water
2. 20 mL Dawn Professional Detergent
3. 20 mL rubbing alcohol
4. 1.2 g guar powder
5. 0.8 g baking powder
6. Airtight container to store soap solution

1.2 Procedures

1. Measure 20 mL of rubbing alcohol and place in a beaker.
2. Add 1.2 g guar powder to the beaker and stir until there are no clumps
3. Combine the alcohol/guar suspension with 400 mL of tap water. Mix gently, continuously, for 10 minutes. In this time, the suspension should thicken slightly.
4. Add the baking powder and stir until evenly dispersed.
5. Adddetergent and sitr gently to combine. Do not stir too fast - causing the mixture to foam will reduce the usable yield of soap solution.
6. Pour mixture into an airtight container. Evaporation over time will change the properties of the soap solution.

The optimal amount of guar powder and detergent will vary based on your water pH,temperature, and humidity. You may want to vary ingredient proportions to see what would be best for you. This recipe was adjusted in Toronto, where the pH of tap water is 6.5 - 8.5. Alcohol is just used to form a slurry and make sure the guar doesn't clump up when you add water to it.

Reference

Adapted from Emory:physics of bubbles for Soap Membrane Filter, IYPT 2020.