New Jersey Institute of Technology

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Cooking with Chemistry: Marshmallows

Admin STEM for Success
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Cooking With Chemistry - Marshmallows

Pre-activity:

<u>Name of activity:</u>
Cooking With Chemistry - Marshmallows

<u>What topic does this activity relate to?</u>
Chemistry

<u>What should the students learn by the end of this activity?</u>
- What a foam is
- What it means to be thermodynamically reversible

<u>Tools/supplies needed (indicate quantity and if it needs to be bought + price range):</u>
- Ingredients (Prices sourced from Walmart)
    - Sugar (4lb bag - $4.58)
    - Light Corn syrup (16 fl oz - $1.94)
    - Unflavored gelatin (4 - 0.25 oz packets - $0.98)
    - Cornstarch (16 oz can - $0.92)
    - Powdered sugar (2lb bag - $1.54)
    - Some type of oil
- Tools
    - Hand or stand Mixer
    - Measuring tools
    - Mixing bowl
    - Baking dish or container
    - Parchment paper
    - Pot

<u>Step-by-step instructions on how to conduct the activity (attach link if found online and make note of modifications for your class here):</u>
Link to original recipe
- prepare the container that your marshmallows will set in

- add two tablespoons each of cornstarch and powdered sugar into a small bowl and mix well. Put that to the side and grab a shallow baking pan or food container.
    - Take a piece of paper towel and use it to coat the pan in a thin layer of oil.
    - Then measure and cut two pieces of parchment paper to fit the container and lay them across each other.
    - Take your powdered sugar and cornstarch mix and cover the bottom and sides of the container. This is going to prevent your marshmix from sticking everywhere.
- Prepare your gelatin.
    - Take one packet of gelatin, which is about 2 ½ teaspoons, and add it to a large mixing bowl.
    - Add three tablespoons of water to the gelatin, and then let it sit while you prepare the sugar.
- Preparing sugar
    - In a pot, add in ¾ cup of sugar, ⅓ cup of light corn syrup, 3 tablespoons of water and stir just to combine.
    - Place the pot on your stove and turn on to med-high heat and let it come to a boil without stirring.
    - Once it comes to a boil, let it go for 2 min.
    - Put on some over mitts, then remove the pot from the heat, and immediately pour it over the gelatin.
- Mixing
    - Take your hand mixer and start mixing the sugar and gelatin together. The mixture will be very hot, so start slow and be careful for about 1 minuet
    - Add in 2 teaspoons of vanilla extract, then continue mixing for 10 minutes on high speed
- Setting
    - Transfer the marshmallow to the container you prepared earlier. It's going to be extremely sticky, so you will most likely need a spoon or rubber spatula to help get it into the container. Spread it out as evenly as you can
    - Take your powdered sugar and cornstarch mixture and coat the top. This will need to set for a minimum of 4 hours, and up to overnight.

After the marshmallows have set, you can cut them up. Generously dust your work surface or cutting board and knife with cornstarch and powdered sugar as the inside of the marshmallow will still be very sticky. Take the giant block of marshmallow out of its container and begin cutting it into your desired shape. As you cut the shapes out, roll the pieces into the powdered sugar and cornstarch mixture so they don't stick to each other. These will store for about two weeks in a sealed container at room temperature.