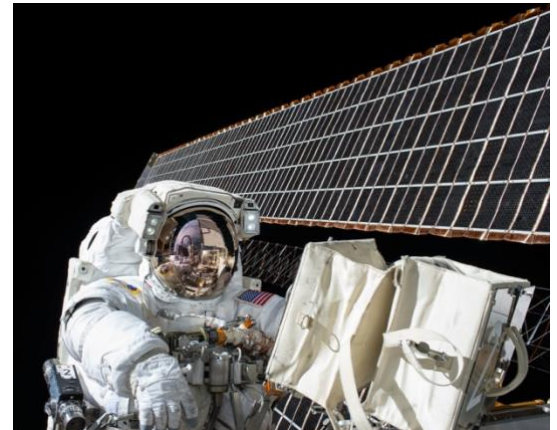


## Engineering at Home: Bouncy Ball Challenge

Engineers often use things called “polymers” as part of their inventions. Though the word may sound unfamiliar, you interact with polymers every day! Plastic is a polymer that’s in everything from toys to toothbrushes. Engineers and scientists even use polymers in building spacecraft, and study how the environment of space effects these materials in different ways. Make your very own polymer, and then modify it to make the bounciest ball possible!



### What are polymers?

Polymers are made from big molecules, but these big molecules are really many small molecules linked together in a pattern. Just like how a single braid is made of many strands of hair!

### What makes polymers special?

The interesting thing about polymers is that you can change the big molecules by changing the small molecules. Just like changing a recipe makes a cookie taste differently, changing the ingredients can make a polymer behave differently.

### Supplies:

- 2 cups Borax
- Corn Starch
- Elmer’s glue
- Warm Water
- Measuring cups/spoons

*Adapted from: EEK! (a project funded by CELL-MET: an NSF ERC under award number EEC-1647837)*



## Instructions:

1. Begin by making a borax solution! Pour 2 tablespoons of warm water into a cup. Add 1/2 teaspoon of borax. Stir until the borax dissolves.
2. To make your bouncy ball, pour 1 tablespoon of glue into the second cup.
3. Add 1/2 teaspoon of the borax solution and 1 tablespoon of corn starch. DO NOT STIR for 15 seconds!
4. Now stir! When it gets too difficult, pull the mixture out and begin kneading it! It'll start off sticky, but soon you'll have a bouncy ball. Tip: Unlike a regular bouncy ball, this can dry out, so make sure you store your ball in a plastic bag or container.
5. Now it's time to experiment with different types of polymers! Make 2 more bouncy balls. This time change the amount of one of the three ingredients (borax solution, corn starch, or glue).
6. Time to test! Which ball bounces best? Use a ruler or tape measure to find out. Record your results in a chart like the one below!

<b>Ball</b>	<b>Changes</b> <i>What happened to the ball when you changed the instructions?</i>	<b>Observations</b> <i>What does the ball feel like? Look like? Roll like?</i>	<b>Bounce Height</b>
<b>Ball 1</b>			
<b>Ball 2</b>			
<b>Ball 3</b>			

Adapted from: *EEK!* (a project funded by CELL-MET: an NSF ERC under award number EEC-1647837)



# NIGHT SKIES IN FORT COLLINS



*Adapted from: EEK! (a project funded by CELL-MET: an NSF ERC under award number EEC-1647837)*

