Make Frost!
*Primary Audience: Elementary*

**Video:** Watch the video, [Science of Hockey - Ice](#)

**Introduction:** In this activity, learners explore why frost forms. They create their own frost using a solution of ice water and salt in a glass.

**Materials:**
- Clear glass
- Ice
- Tap water
- Paper towel
- 4 tablespoons of salt (rock salt works best, but use what you have available!)

**Instructions:**
1. Fill the cup ¾ full of ice
2. Cover the ice with water.
3. Dry the outside of the cup with the paper towel.
4. Sprinkle the salt over the ice water.
5. Gently swirl the cup to mix the salt, water and ice.
6. Use your fingernail to scratch the outside of the cup every 15 seconds for two minutes. What happens?

**What’s Going On?**
You may often see liquid condensation that forms on windows and other surfaces when air cools. The liquid that condenses is the water vapor that is in the air all around us. When it is even colder, frost forms on a surface. Frost forms when the water vapor changes from gas to solid without going through the liquid state. This can happen when the air temperature is slightly above freezing and the surface is below freezing.

Pure water freezes at 32°F (0°C). Adding salt to the water in this activity lowers the freezing point of the water, so the ice will start to melt even at freezing temperatures. That means that the temperature of the saltwater in the glass, and then the glass itself, can fall below freezing. We now have a situation in which the surface is at a temperature below freezing and the air surrounding it is at a temperature above freezing. Thus, frost will form on the surface of the glass!

**Additional Resources:**
Reach out to the [COSI Department of Science Content](#) if you have any questions or comments!