Name: Date: Class:

Activity Embedded Assessment Answer Key

Activity instructions:

1. Put 30 mL of the **sodium alginate (SA) solution in each one of the petri dishes or Styrofoam cups, using the graduated cylinder, pipette or syringe.**
2. Add a drop or two of food coloring to the calcium chloride in **beaker or cup 1 (0.1M)**.
3. Put 20 mL of **0.1M** solution into one of the petri dishes or Styrofoam cups with SA from Step 1, using the graduated cylinder, pipette, or syringe.
4. Add a drop or two of a different food coloring to the calcium chloride in **beaker or cup 2 (0.05M).**
5. Put 20 mL of **0.05M** solution into the second petri dish or Styrofoam cup with SA from Step 1, using the graduated cylinder, pipette or syringe.
6. Add a drop or two of another food coloring to the calcium chloride in **beaker or cup 3 (0.02M).**
7. Put 20 mL of **0.02M** solution into the last petri dish or Styrofoam cup with the SA from Step 1, using the graduated cylinder, pipette or syringe.
8. Observe the gelling process in each of the 3 petri dishes or cups and record your observations.
9. Wait a couple or more minutes and then notice any changes in the consistency of the hydrogels.

Instructions: Answer the following questions

1. What will happen to the gels if you wait a longer time?
   The gels will be harder/firmer.

2. Explain the reason for your answer above.
   There is more time for the calcium ions to replace the sodium ions, forming a denser network of polymers.

3. What will happen to the gels if you increase the concentration (molarity) of the crosslinking solution?
   The gels will also be firmer/harder.

4. Explain the reason for your answer above.
   More concentration means there are more moles of the crosslinking substance, with more calcium ions available to replace the sodium ions.