

Lab Procedure for Samples Handout

Note to teacher: This file contains 16 sheets to guide group testing of different amounts of corn starch, water, vinegar and glycerin; 4 sheets each.

Phosphorescence in bioplastic: **Changing the amount of corn starch (1 of 4)**

SAMPLE NAME: _____ 10 g CS

Reaction scheme:

| | |
|-----------------------|-----------------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of corn starch (2 of 4)

SAMPLE NAME: _____ g CS

Reaction scheme:

| | |
|-----------------------|-------------|
| corn starch | _____ grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|--|--------------|
| 1. In a 1,000-ml beaker, add _____ grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of corn starch (3 of 4)

SAMPLE NAME: _____ g CS

Reaction scheme:

| | |
|-----------------------|--------------------|
| corn starch | _____ grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add _____ grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of corn starch (4 of 4)

SAMPLE NAME: _____ g CS

Reaction scheme:

| | |
|-----------------------|-------------|
| corn starch | _____ grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|--|--------------|
| 1. In a 1,000-ml beaker, add _____ grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of water (1 of 4)

SAMPLE NAME: _____ ml water

Reaction scheme:

| | |
|-----------------------|--------------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of water (2 of 4)

SAMPLE NAME: _____ ml water

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | _____ ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add _____ ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of water (3 of 4)

SAMPLE NAME: _____ ml water

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | _____ ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add _____ ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of water (4 of 4)

SAMPLE NAME: _____ ml water

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | _____ ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add _____ ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of vinegar (1 of 4)

SAMPLE NAME: _____ 5 ml vinegar

Reaction scheme:

| | |
|-----------------------|-------------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of vinegar (2 of 4)

SAMPLE NAME: _____ ml vinegar

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | _____ ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add _____ ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of vinegar (3 of 4)

SAMPLE NAME: _____ ml vinegar

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | _____ ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add _____ ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of vinegar (4 of 4)

SAMPLE NAME: _____ ml vinegar

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | _____ ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add _____ ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of glycerin (1 of 4)SAMPLE NAME: _____ **5 ml glycerin**

Reaction scheme:

| | |
|-----------------------|-------------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | 5 ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add 5 ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of glycerin (2 of 4)

SAMPLE NAME: _____ ml glycerin

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | _____ ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add _____ ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of glycerin (3 of 4)

SAMPLE NAME: _____ ml glycerin

Reaction scheme:

| | |
|-----------------------|-----------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | _____ ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add _____ ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |

Phosphorescence in bioplastic: Changing the amount of glycerin (4 of 4)

SAMPLE NAME: _____ ml glycerin

Reaction scheme:

| | |
|-----------------------|-----------------|
| corn starch | 10 grams |
| water | 60 ml |
| vinegar | 5 ml |
| glycerin | _____ ml |
| phosphorescence solid | 0.6 grams |

| Procedures | Observations |
|---|--------------|
| 1. In a 1,000-ml beaker, add 10 grams of corn starch (using weigh paper and a balance) | |
| 2. Add 5 ml of vinegar (using a 10-ml graduated cylinder) to the same beaker | |
| 3. Add _____ ml of glycerin (using a 10-ml graduated cylinder) to the same beaker | |
| 4. Add 60 ml of water (using a 100-ml graduated cylinder) to the same beaker. USE YOUR MEASURED WATER TO GET THE GLYCERIN RESIDUE FROM THE GRADUATED CYLINDER IN THE PREVIOUS STEP. | |
| 5. Using a silicone spatula, stir the mixture until the corn starch is dissolved and the mixture is thoroughly combined | |
| 6. Measure out 60 ml of the mixture (using a graduated cylinder) and dispense into a clean 250-ml beaker | |
| 7. Add 0.6 grams of the phosphorescence solid to the 60-ml mixture in the 250-ml beaker (from the previous STEP) | |
| 8. Using a clean silicone spatula, stir the mixture until the phosphorescence solid is completely dissolved throughout | |
| 9. Using a hot plate preheated to 400 °C, heat the mixture in the 250-ml beaker | |
| 10 USING THE SILICONE SPATULA, CONTINUOUSLY STIR THE MIXTURE WHILE HEATING | |
| 11. For 6 minutes and 30 seconds, continue to heat and stir the mixture until it becomes clear or becomes a viscous solid that is hard to stir **BE CONSISTANT WITH TIME FOR ALL YOUR SAMPLES** | |
| 12. Use the silicone spatula to transfer the heated mixture into a small petri dish that is lined with aluminum foil and labeled with the sample name | |
| 13. Let the phosphorescence bioplastic dry and harden overnight | |