

Forming Ionic Compounds

Summary

Students will practice making and recording observations about various compounds and their aqueous solutions, write the formulas for the compounds, then perform chemical reactions and write the names and formulas of the products.

Main Core Tie

Science - Chemistry

[Standard 3 Objective 2](#)

Time Frame

1 class periods of 90 minutes each

Group Size

Small Groups

Materials

- [reaction plate for transparency](#)
(attached) photocopied onto transparencies (one for each group)
- [student sheet](#)
(attached)
solid ionic compounds (in beakers or screw-top vials)
aqueous ionic compounds (in dropper bottles, or in flasks with separate droppers)

Background for Teachers

Safety considerations:

See MSDS or the chemical container for precautions for each chemical. Some compounds in this lab are toxic, skin irritants, caustic, etc. Small enough quantities are used, however (two drops of each solution for each reaction), that the reactions plates can be rinsed with excess water down the drain. Use safety goggles and aprons.

Student Prior Knowledge

ways of observing, writing names of ionic compounds from formulas and vice-versa (Note: It is not necessary that students be familiar with writing reactions and predicting products, as the ions that will react in each case are designated for them, and they only need to combine these ions.)

Instructional Procedures

Before class, prepare 100 mL of 0.1 M solutions of each of the following: (If you have dropper bottles to dispense these solutions into, you can fill 2 dropper bottles (50 mL each) of each solution, and the preparations should last a couple of years, at least.)

Use the following number of grams in 100 mL of deionized water:

AgNO₃: 1.69 g

Pb(NO₃)₂: 3.30 g

CuSO₄: 2.49 g (for copper sulfate pentahydrate)

MgSO₄: 2.45 g (for magnesium sulfate heptahydrate)

FeCl₃: 1.62 g

KI: 1.66 g

NaOH: 0.40 g

Na₂CO₃: 1.10 g (or 1.2 grams of sodium carbonate monohydrate)

Na₃PO₄: 3.8 g (for sodium phosphate dodecahydrate)

For each of the above solids, put a gram or so in the bottom of a small beaker (or, better...in screwtop vials) for observation.

Photocopy the Reaction Plate for the Ionic Bonding Lab onto transparency sheets...one for each lab group. These can be rinsed, patted dry, and repeatedly used. I find this method better than simply using bare transparency sheets over photocopied paper reaction plates, as students can either view their reactions on the black lab table or slide a piece of paper under it to view their reactions on a white background.

In class, distribute the Ionic Bonding Lab student sheet to each student. The questions would work either as pre-lab questions or conclusion questions. (Question 7 can only be completed after the lab.)

Emphasize the importance of not contaminating the stock solutions by not allowing the tip of the droppers to touch the table, the drops of solution to be added to, or the reaction plate.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)