Activity: E-config Battleship

FOR THE TEACHER

Summary
In this activity, students review electron configurations by using the periodic table like a Battleship board.

Resource Type  Grade Level
Activity  High school

Objectives
By the end of this lesson, students should be able to
- Know how to determine electron configurations of elements based on their position on the periodic table.

Chemistry Topics
This lesson supports students’ understanding of
- Electron configuration

Time
Teacher Preparation: 15 minutes
Lesson: 1–2 class periods

Materials
- 1 manila folder per student
- 2 laminated periodic tables per folder
- 2 dry erase markers per student (different colors)

Safety
No safety concerns need to be accounted for in this activity.

Teacher Notes
- Tape the periodic tables to the top and the bottom of the inside of the manila folder, both of them right side up. This way students can sit on either side of the folder and not see each other’s periodic table.
- The number of ships can be increased which will create more “hits” and more fun!
- The method of stating configurations can vary. For example, Ge could be stated as 4p² or 4s² 3d¹⁰ 4p² or [Ar] 4s² 3d¹⁰ 4p².

FOR THE STUDENT

Lesson
Purpose
To know how to look at an element on the periodic table and instantly determine its electron configuration.
Materials
1 manila folder per student
2 laminated periodic tables per folder
2 dry erase markers per student-different colors

How to play
- The game is played like traditional battleship. Each student has the manila folder open so that the opponent cannot see his/her periodic table.
- Each player puts a line through the appropriate number of elements to indicate an aircraft carrier (5 elements), a battleship (4 elements), a submarine (3 elements), a destroyer (3 elements), and a PT boat (2 elements).
- The first player calls a valence configuration for an element of his/her choice. For example, carbon would be 2p². The other player states the name of the element called (to verify understanding of the “code” between the players), and then says “hit” or “miss.”
- The player stating the configuration marks the top periodic table to note shots taken and the player being shot at marks hits and misses on the bottom periodic table.
- Play continues until all ships are sunk.