

## Inner Space Exploration

### Problem:

How do researchers learn about atomic structure even when they are unable to directly observe what they are studying?

### Materials:

sealed "atomic box" containing one "alpha marble"

### Procedure:

You have been given one of twelve different lettered "atomic boxes," each containing objects of varying size, shape and location. Also contained within each box is an "alpha marble," which will assist you in determining the internal structure of your "atomic box." Note which lettered box you are examining. You now have five minutes to find and describe the shape(s) of the object(s) (nucleus) in the box (atom). Sketch what you believe to be the internal structure of your "atom."

After five minutes, examine a different box. After another five minutes, exchange one more time so that each group will have investigated three boxes. Make sure you record the letters of the boxes you examine.

### Summing Up:

1. Summarize your findings by describing the size, shape, and location of the objects in each box you examined.
2. What types of objects within the boxes would be impossible to detect using this technique?
3. How does this experiment show the difficulties scientists encountered in discovering what was inside the atom?