

Neutron Activation and Radioactive Decay Worksheet

Complete this worksheet while viewing the “Introduction to an Atom and Radiation” slides or video.

Part 1: Review of atoms, radiation, and half-life.

a. Review of an atom

What is the typical size of an atom? _____

What three particles make up an atom?

1. _____
2. _____
3. _____

What is the size of a plutonium atom’s nucleus? _____

Name the parts of an atom that are found in the nucleus: _____ and _____.

b. Types of radiation

List three types of radiation:

1. _____
2. _____
3. _____

Which type(s) of radiation is(are) not affected by a magnetic field? _____

c. Radioactive half-life

Choose the correct answer:

The half-life is the time needed for:

- _____ a. one radioactive atom to decay.
- _____ b. two radioactive atoms to decay.
- _____ c. half of the radioactive of the atoms to decay.
- _____ d. all of the radioactive atoms to decay.

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Complete this worksheet while viewing the “The Neutron Activation Process” slides or video.

Part 2: The Neutron Activation Process

1. Which type of decay occurs with ^{238}Pu ?

- a. alpha
- b. beta
- c. gamma

2. Alpha particles collide with which element to produce neutrons?

- a. Protons
- b. Copper
- c. Beryllium
- d. Carbon
- e. Zinc

3. In the neutron activation process shown in the video, an ejected neutron collides with a test element. What happens to the neutron?

- a. it is lost.
- b. disappears.
- c. is changed into a new atom.
- d. is absorbed into the sample atom's nucleus.
- e. is converted into electrons.

4. After neutron activation, the sample atom

- a. is lost.
- b. disappears.
- c. is changed into a new atom.
- d. does not change.
- e. is converted into electrons.