

# Alpha & Beta Decay

## Part I: Alpha Decay

<http://phet.colorado.edu/en/simulation/alpha-decay>

Open the “Alpha Decay” sim and go to the SECOND tab (single atom).

1. Complete the following chart:

**Data Table**

|                    | Before Alpha Decay | After Alpha Decay | Alpha Particle |
|--------------------|--------------------|-------------------|----------------|
| Chemical Symbol    |                    |                   |                |
| Element Name       |                    |                   |                |
| Mass               |                    |                   |                |
| Number of Protons  |                    |                   |                |
| Number of Neutrons |                    |                   |                |

5. What happens during alpha decay. Be sure to include how the atom changed (refer to the table above) and what was ejected during the decay. (sketch might help)
  
6. **Transmutation** is the process by which an atom changes its identity by ejecting a particle of radiation. When an atom decays by alpha radiation, is this considered transmutation?

## Part II: Beta Decay

<http://phet.colorado.edu/en/simulation/beta-decay>

Open the “Beta Decay” sim and go to the SECOND tab (single atom).

1. Complete the chart:

**Data Table**

|                    | Hydrogen-3   |             | Carbon-14    |             |
|--------------------|--------------|-------------|--------------|-------------|
|                    | Before Decay | After Decay | Before Decay | After Decay |
| Chemical Symbol    |              |             |              |             |
| Element Name       |              |             |              |             |
| Mass               |              |             |              |             |
| Number of Protons  |              |             |              |             |
| Number of Neutrons |              |             |              |             |

2. What is the beta particle? (Sketch might help)
  
3. What happens during beta decay. How the atom changed (refer to the table above), what was ejected during the decay.
  
4. Transmutation is the process by which an atom changes its identity by ejecting a particle of radiation. When an atom decays by beta radiation, is this considered transmutation?