Iso? – What do they have in common …

Table of Isotopes and Decay Chains

The table of isotopes, or nuclide chart, unlike the periodic table, not only represents the elements but all known isotopes of an element. In the chart, you can usually look up the half-life of an isotope and how its decay modes.

Task: Build the Table of Isotops

The first tasks involve bringing order to the chaos of the many puzzle pieces for the isotopes.

1. First, sort the puzzle pieces by element name and then arrange them in ascending order by mass.
2. You now have a strip of isotopes for each element. Think about how these strips can be arranged meaningfully on top of one another.
3. Your teacher will now give you the pieces for the axes. Assemble them and arrange your puzzle pieces accordingly.
4. Examine what the isotopes have in common that are:
   a) horizontally (↔) next to each other,
   b) vertically (↕) on top of each other,
   c) diagonally (↘) forming a line.
5. Research the meaning and origin of the terms isotopes, isotones, and isobars. Assign them to your findings from the previous task.

Task: Find a Decay Chain

Once you've organized the isotopes, you can use the chart to determine decay series.

6. There are three modes of decay: alpha (α), beta minus (β^-), and beta plus (β^+). Research what happens in the nucleus during each type, and then explain where the decay leads on the isotope chart.
7. Use the chart to create the decay chain for Uranium-236. Locate this isotope and determine how it decays to place the appropriate frame. Continue until you reach a stable isotope (black) and then write down the entire decay chain.