

## Episode 523: Preparation for nuclear stability topic

Why are some nuclides stable while others are unstable (radioactive)? Starting from the pattern of stability, this section looks at forces in the nucleus and the idea of binding energy.

**Episode 524: Stable nuclides**

**Episode 525: Binding energy**

### Main aims

Students will:

1. Sketch the N-Z graph for stable nuclei.
2. Describe the balance of forces that results in a stable nucleus.
3. Calculate mass defect and binding energy.
4. Relate nuclear fission and fusion to the graph of binding energy per nucleon.

### Prior knowledge

Students should know about the composition of nuclei in terms of protons and neutrons. They should be familiar with nuclear notation (e.g.  ${}_{83}^{209}\text{Bi}$  )

### Where this leads

An understanding of nuclear stability leads on to a study of nuclear fusion and fission.