

Nuclear Fusion Lab

Objective:

Demonstrate the concept of nuclear fusion using marshmallows to represent protons and corkscrew pasta to represent gamma radiation.

Materials:

- miniature marshmallows
- corkscrew pasta



SAFETY

Students should refrain from eating in the lab environment.

Procedure:

1. Pick up two marshmallows. Each marshmallow represents the nucleus of a hydrogen atom, as hydrogen contains one proton.
2. To demonstrate how a star makes helium, crush the marshmallows together as tightly as you can, representing nuclear fusion. The new nucleus formed from this fusion is that of helium.
3. Each time two atoms that are lighter than iron fuse, the reaction also releases energy in the form of gamma radiation. Lay a piece of pasta on the table next to the helium nucleus you just formed to represent this release of radiation.
4. Next, use your hydrogen nuclei marshmallows to make two more helium nuclei, including the pasta gamma radiation product.
5. Finally, take all three of your helium nuclei and fuse them together between your hands. The new atomic nucleus that results is made up of six protons, meaning the fusion of your three helium nuclei has resulted in the creation of carbon.