

# TSAAPT

## Texas Section of the American Association of Physics Teachers

Connecting physics teachers in the state of Texas

### Rain Drops

#### What to do?

Gently shake the bottle so that colored droplets of water appear in the mineral oil. Observe that different sized drops fall at different speeds.

#### What's going on?

The water is immiscible in the oil and so will form drops when you mix the two. The resistance forces are large and so the speed at which the drops fall depends on the size of the drops with larger drops reaching a greater terminal velocity.

#### How do I build it?

Materials: 1 clear square sided plastic bottle with lid (empty Fiji water bottles work well), mineral oil, water, food coloring, paper towels, epoxy or hot glue (optional), tape (optional)

Assembly: Add a couple of drops to water in a measuring cup. Pour a small amount of water into a clear square-sided plastic bottle—perhaps 10% of the volume of your bottle. Fill the remainder of the bottle with mineral oil. Fill to the top until it looks like it might spill over. Screw on the cap and have paper towels ready for any oil spills! We recommend coating the lid in epoxy or sealing it with hot glue and then wrapping it with tape, so your classroom stays oil free.

#### Enrichment

You can ask your students what is different about gentle rain versus rain drops that go “splat”? Students can observe how the shape of the drops changes with size and what happens if drops collide.