

MIND TREKKERS

FunFly Sticks Lesson Plan

Amount of time Demo takes: 1-3 min

Container: Large bin

Materials:

1. FunFly Sticks
2. Mylar shapes or tinsel
3. Batteries

Set up instructions:

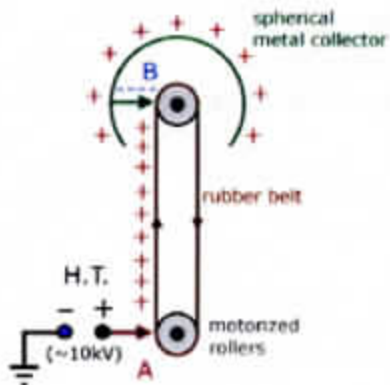
1. In each box there is a motor end of the wand and a cardboard end of the wand. Assemble the two pieces.
2. Press the white button to run the motor and test the batteries. Extra batteries are available in kit or with the extra supplies box.
3. To use the fun fly stick you only need to briefly (1-3 seconds) use the white motor button to create a positive charge on the end of the stick. If you touch the end of the wand it will become discharged and require you to run the motor again.
4. Hold the Mylar shape above the wand, careful to not touch the end of the cardboard tube. (that would discharge it) Let go of the Mylar above the charged wand and watch it float.

SAFETY!

Safe Demo

Lessons big idea bullet points

- FunFly Sticks have small Van de Graaff generators inside that, when turned on, makes a static electric field.
- Positive charge of the electrons builds up and repels the mylar shapes/tinsel. This visibly shows the invisible electric field surrounding the wand.



Instructional Procedure

1. With practice you should be able to make the mylar shapes float above the tip of the wand. Allow participants, to handle the Fun Fly Sticks with brief instructions. Make sure they are told to stay in your area, gently handle the Mylar pieces, and not to hold down the white motor button. It works best if you get the Mylar floating and carefully hand over the wand to the participant and let them play until the wand or Mylar get discharged.
2. This works the same way as the Van de Graaff generator. A belt inside the wand builds up a positive charge on the tip of the wand. The positive charges create an electric field of positive energy that repels the uncharged mylar. The repulsion causes the mylar to "float". The round Mylar piece shows this really well. The charged wand positively charges the Mylar and the charged Mylar spreads out and away. The result is a floating ball shape.
3. Getting too close to walls or other surfaces could cause the mylar to get stuck on them.
4. The mylar shapes are extremely delicate - handle with care and try to protect them if they start to fall.
5. This will not work as well in humid or wet conditions since you won't be able to generate as much static electricity.
6. Read the booklet that comes with the wand for more information and fun ideas.
7. Running the motor for an extended period can cause Fun Fly Sticks to wear out quickly.

Assessment

Sample questions you can ask:

1. What causes the mylar to float?

Clean Up

Clean up between demonstrations if needed. When completely finished gather all materials listed for this demonstration and make sure everything is accounted for. If something was used up, broken or damaged. Let someone know so it can get replaced or fixed.

References

<http://www.a-levelphysicstutor.com/field-elect-2.php>

National Science Standards

K-4 Content Standard B: Physical Science, Light, heat, electricity and magnetism

5-8 Content Standard B: Physical Science, Transfer of energy, Motions and forces

9-12 Content Standard B: Physical Science, Motions and forces, Interactions of energy and matter