

5A40.24 Throw Foam Peanuts at a Van de Graaf

To show induced dipole attraction and electrostatic repulsion.

DESCRIPTION: A foam packing peanut is thrown at a charged Van de Graaf dome. The charge from the Van de Graaf polarizes the electric dipoles in the packing peanut, causing it to be attracted to the dome. When the peanut comes in contact with the dome, however, it picks up a charge of the same sign as the charge on the dome and is repelled. Alternatively, the peanut can be tied to a string and held at the end of the meter stick to see the same effect. Note: this demonstration can only be performed on a dry day.

SUGGESTED TECHNIQUE

Default (Peanut Throwing):

1. Turn on the Van de Graaf.
2. Stand about five feet away and throw a packing peanut in the direction of the dome. Note that the peanut is attracted to the dome until it makes contact and then is repelled.
3. Many peanuts will be provided, so you may repeat step 2 multiple times.
4. Turn off the Van de Graaf at the end of the demonstration and discharge the dome with the grounding sphere.

Alternative (Peanut on a Stick):

1. Turn on the Van de Graaf.
2. Stand about five feet away. Holding one end of the meter stick, bring the peanut near the Van de Graaf. Note that the peanut is attracted to the dome until it makes contact and then is repelled.
3. If you would like to repeat step 2, you must discharge the peanut first. To do this, cup the peanut in your hand and blow on it.
4. Turn off the Van de Graaf at the end of the demonstration and discharge the dome with the grounding sphere.

TECHNICAL DETAILS

LOCATION OF APPARATUS

EQUIPMENT	LOCATION
Van de Graaff (Both)	E&M A
Grounding Sphere (Both)	E&M A
Packing Peanuts (Both)	E&M A
Meter Stick (Alternative)	Left of Sink
String (Alternative)	General Use E

LOCATION OF COMMON ACCESSORIES

SETUP INSTRUCTIONS

Default (Peanut Throwing): Setup Time ~15 min

1. Connect the grounding sphere to the Van de Graaf generator with a banana cable.
2. Provide a beaker of packing peanuts.

Alternative (Peanut on a Stick): Setup Time ~20 min

1. Connect the grounding sphere to the Van de Graaf generator with a banana cable.
2. Cut a piece of string about 18 inches long.
3. Tie one end of the string to a packing peanut and the other to the end of a meter stick.

ADDITIONAL RESOURCES