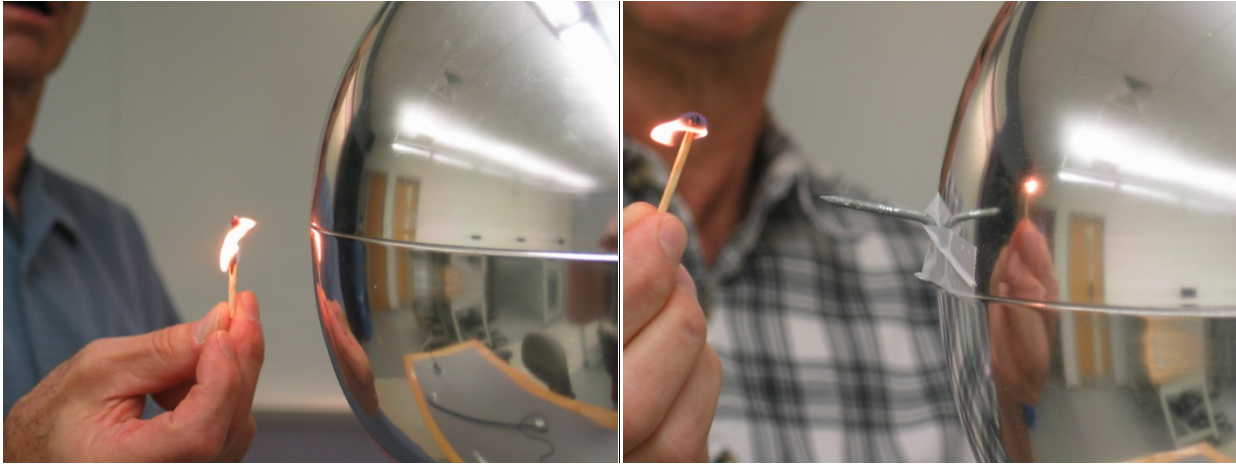


Attractive Flame and Ion Breeze (VdG)



Purpose: To show that the light-emitting ions in a flame (i.e. plasma) are negatively charged, and that a charged sharp point generates a breeze.

Location: room 146; nail and matches on L3, VdG on L1

Connect the wand to the ground terminal on the base of the Van de Graaff and turn the knob to full speed. The VdG becomes positively charged. Strike a match and hold it near the side of the dome. It will be attracted (left photo), showing that the visible flame, which is actually a hot plasma of ions and electrons, is predominately negatively charged (i.e. hot electrons emit light).

Next, tape a sharp nail to the side of dome and hold a lit match near the point (right photo). It will be blown away from the point, showing that positively charged air molecules are repelled as their electrons are attracted to the point of the nail.