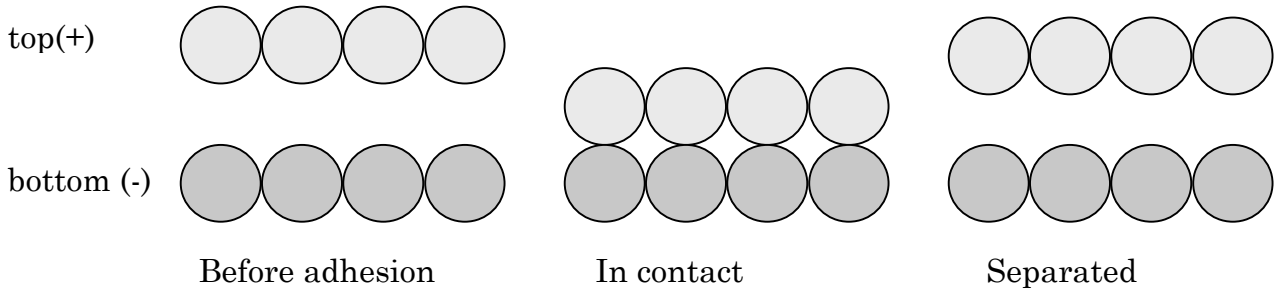
Unit 8 - Sticky Tape Post-Lab

Thomson Model and Sticky Tape

Let's see how we can use Thomson's model to explain the behavior of the sticky tape when we made our tape stacks.

A few atoms from the *top tape* and the *bottom tape* are represented in the diagram below. Add electrons to each atom to show what happens to the electrons when we make a tape stack out of neutral pieces of tape and then pull them apart.



Describe the *macroscopic* changes in the tapes and then provide a *microscopic* explanation based on Thomson's model of the atom and your drawings.

Behavior of Foil and Paper with Charged Tapes

We observed that neither foil (metal atoms) nor paper (non-metal atoms) would attract each other. But foil and paper are **both** attracted to **both** the charged tapes (top and bottom).
How can we use the pudding model of atoms to explain the differences we observed?

Several atoms from the paper and foil are drawn on the next page. The ones on the left have no charged object near them. The ones on the right are next to a top tape
(+ charge).

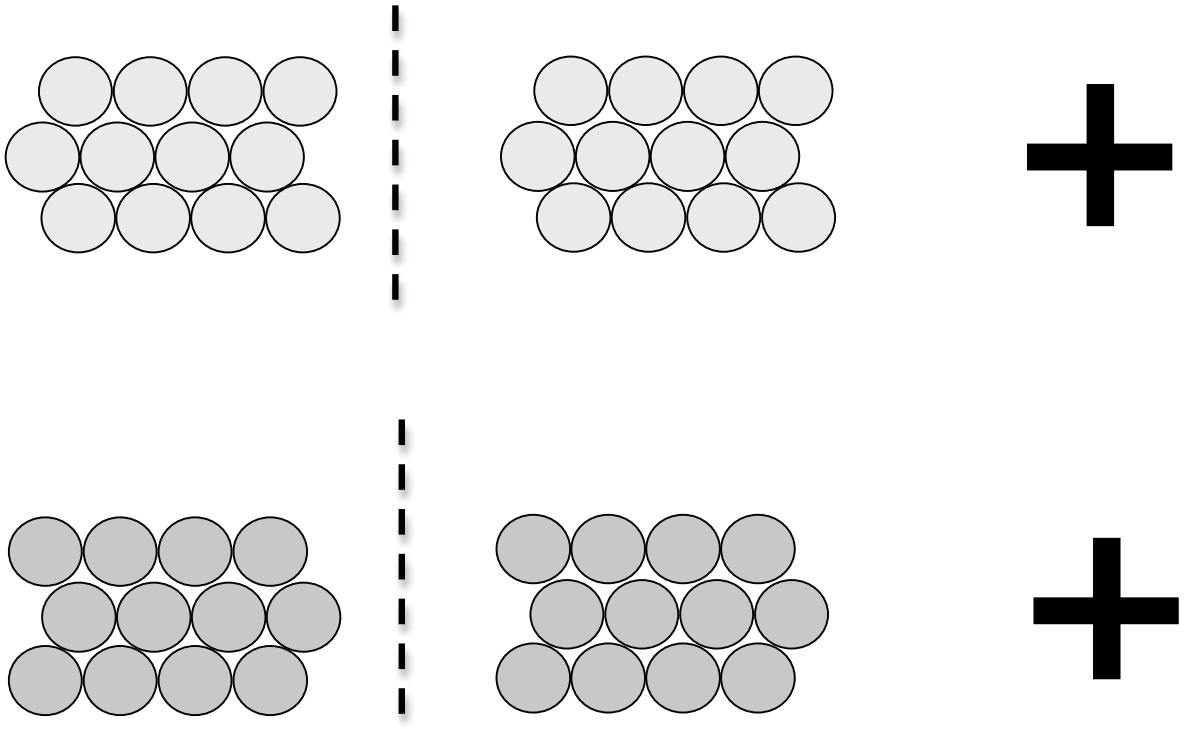
Add force vectors to the non-metal (paper) atoms and the top tape in the first row to show the attraction between the paper and the tape. Then do the same for the foil and the tape in the second row. Be sure the *size of the vectors* shows the relative strengths of the attractions.

Metal (Al foil)
Non-metal
no charged object near
(paper)

Metal (Al foil)
Non-metal
top tape near
(paper)

Top Tape
Top Tape

Now draw the electrons in each atom "bowl" to show their arrangements when no charged object is near present and then when a charged object is brought near.



Explain why these arrangements of electrons would produce the observed attractions.