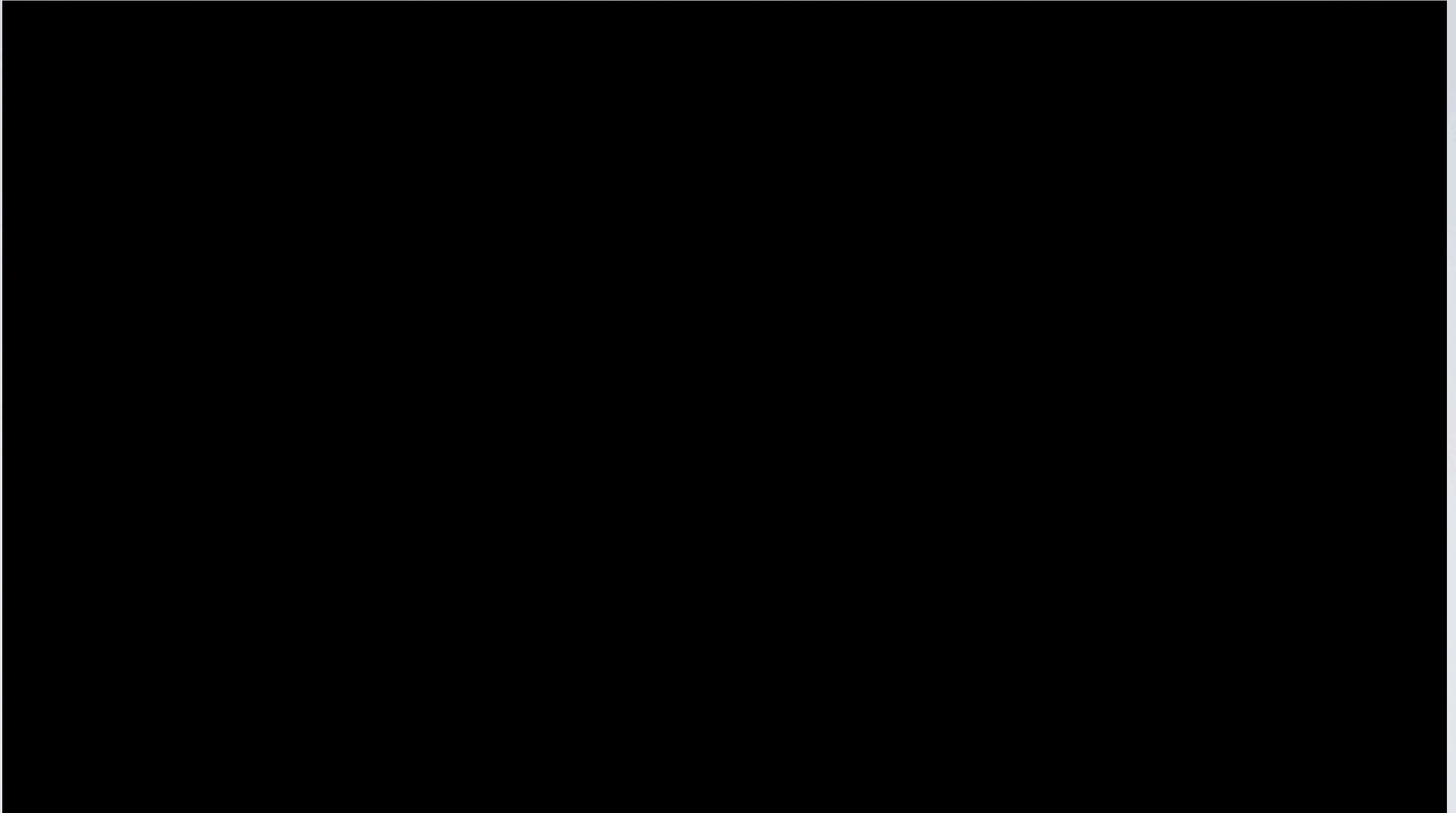


- 1. Mini-Lab (groups of three)
- 2. What happened? (10.1 note)

Why does glitter stick to everything?





10.1 EXPLORING THE NATURE OF STATIC ELECTRICITY

Monday November 21, 2016.

STATIC ELECTRICITY

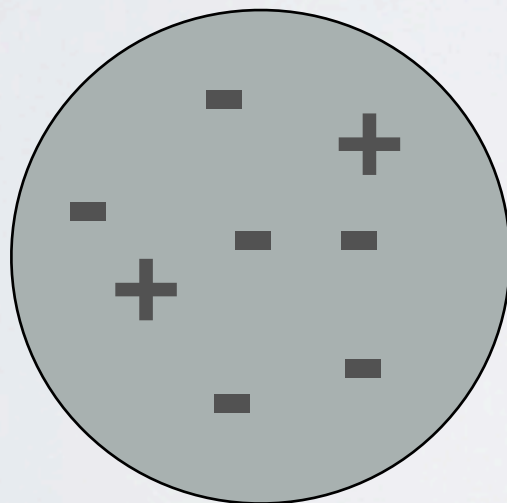
- ◆ static electricity is caused by electric charges: charged particles that exert an electric force on each other
 - ◆ examples of static electricity: lightning, shock when touching a doorknob, crazy hair when you take off a wool sweater
- ◆ RECALL: protons have a positive (+) charge, neutrons have no (0) charge and electrons have a negative (-) charge
- ◆ electrons are the only particles that are transferred between objects!

STATIC CHARGES

- ♦ objects can become charged when electrons move from one object to another

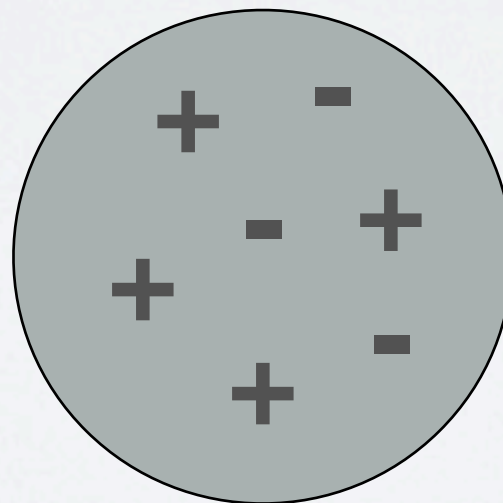
NEGATIVELY

charged

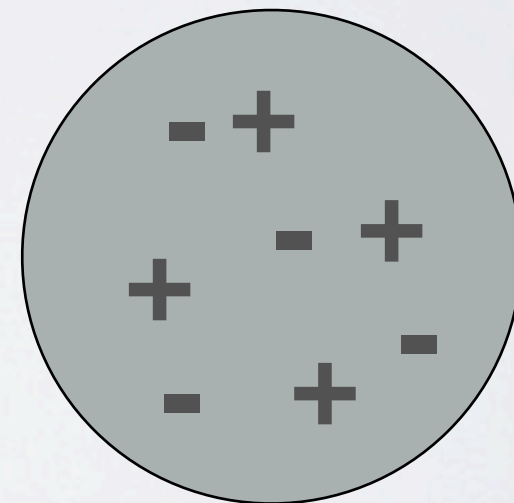


POSITIVELY

charged

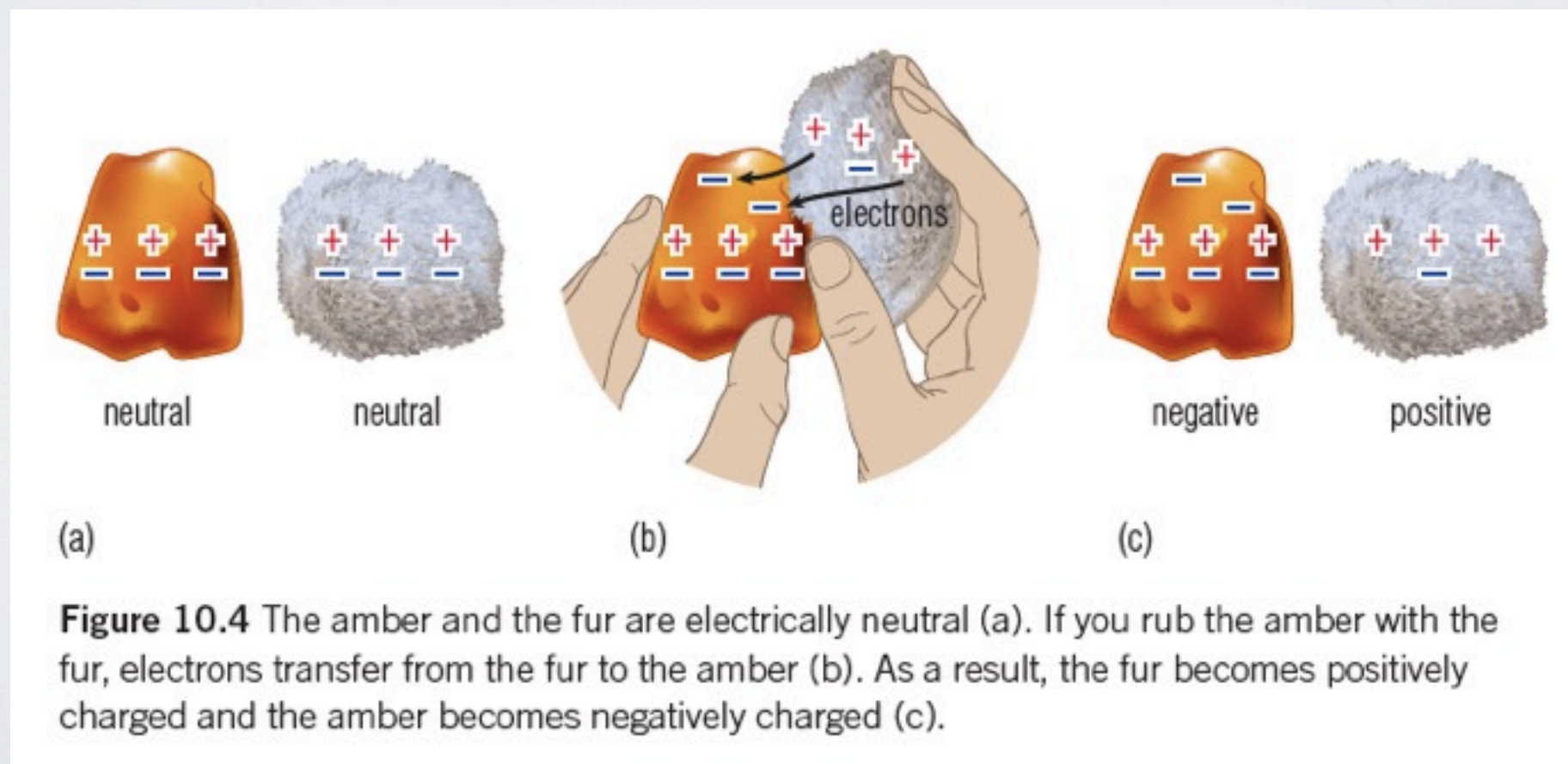


NEUTRAL



FRICTION

- ♦ one common cause of electron transfer is friction: when objects rub against each other
- ♦ the force of friction causes one of the objects to lose electrons, and one to gain them
- ♦ electrons are never LOST they are simply TRANSFERRED
- ♦ both objects are neutral before they are rubbed against each other



ELECTRON AFFINITY

- ♦ different substances have different abilities to hold on to electrons
- ♦ the tendency of a substance to hold on to the electrons is called electron affinity
- ♦ the higher the material on the Triboelectric Series (see right), the more it will LOSE electrons
- ♦ using this table you can determine which material will be positively charged and which will be negatively charged when you rub two of the objects together

<div>Tend to lose electrons</div> <div>↑</div> <div>↓</div> <div>Tend to gain electrons</div>	(+)
	human hands (dry)
	glass
	human hair
	nylon
	cat fur
	silk
	cotton
	steel
	wood
	amber
	ebonite
	plastic wrap
	Teflon®
	(-)

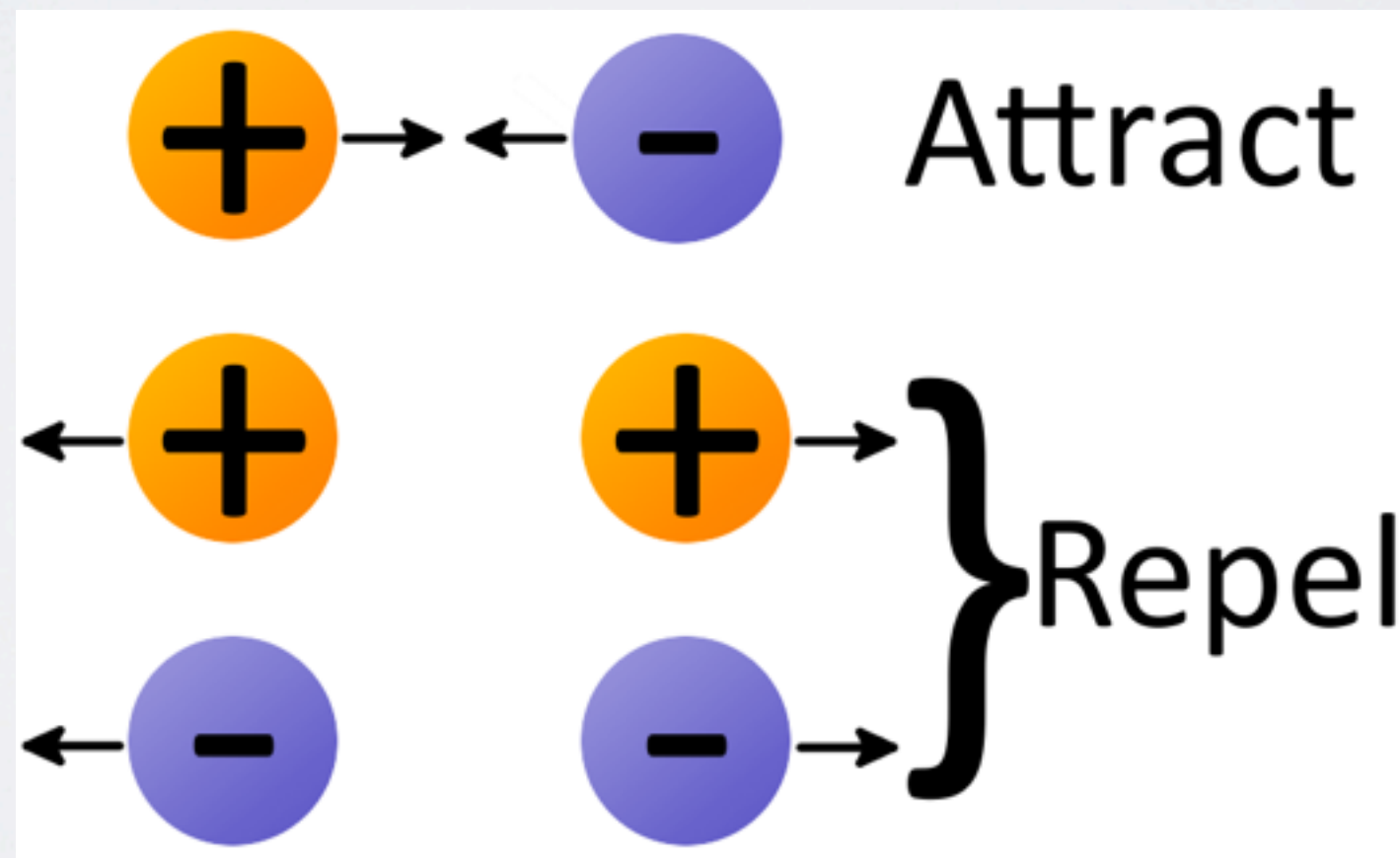
ELECTRON AFFINITY

- ♦ e.g. rub nylon and steel together:
which will be negative and which will be positive?
- ♦ the nylon is more likely to lose electrons (because it is higher in the table) and therefore will become positive and the steel will gain those electrons, becoming negative

Tend to lose electrons ↑ ↓ Tend to gain electrons	(+)
	human hands (dry)
	glass
	human hair
	nylon
	cat fur
	silk
	cotton
	steel
	wood
	amber
	ebonite
	plastic wrap
	Teflon®
	(-)

LAWS OF ATTRACTION & REPULSION

- ◆ The Law of Attraction: states that particles with opposite charges attract each other
- ◆ The Law of Repulsion: states that particles with like charges repel each other



INSULATORS AND CONDUCTORS

- ◆ conductivity: the ability of materials to allow electrons to move freely in them
 - ◆ insulators: hold onto their electrons and do not allow them to move easily
 - ◆ examples: wood, glass, plastic
 - ◆ conductors: allow electrons to move freely
 - ◆ examples: metals
- ◆ conduction: the movement or transmission of electrons through a substance
- ◆ fair conductors/semi-conductors: electrons move less freely than in conductors

TEXTBOOK QUESTIONS

- page 403: #1, 3, 6, 9, 10, 11