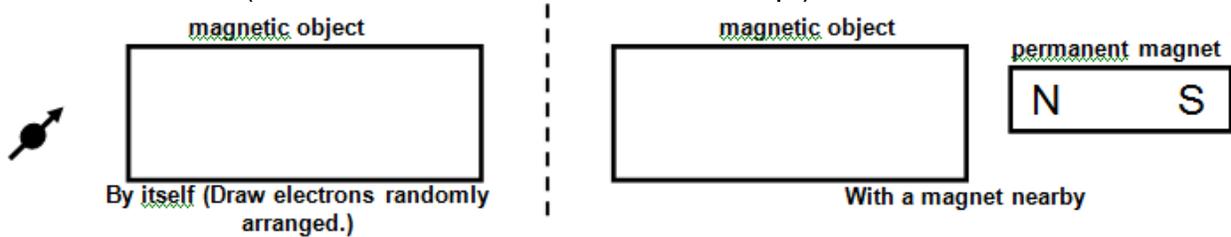


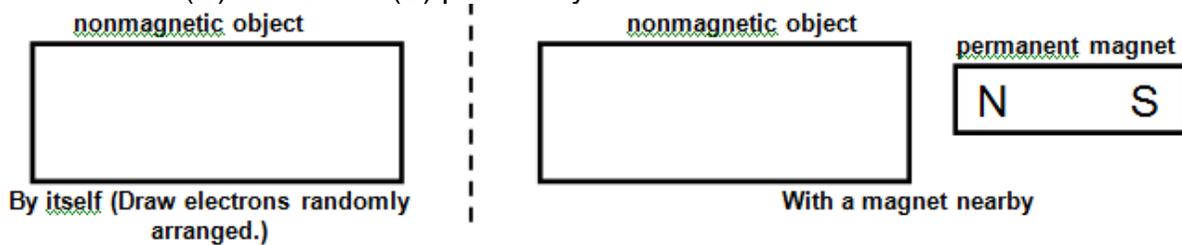
Magnetic Fields

Electromagnetism lab review

1. What is the difference between a magnet, a magnetic material, and a nonmagnetic material. (hint talk about the domains being fixed or movable, and random or aligned.)
2. Fill in the drawings of a magnetic object below with spinning electrons like the one shown at the left. Be sure to label the North (N) and South (S) poles on your electrons. (Refer to the note above for a little help.)

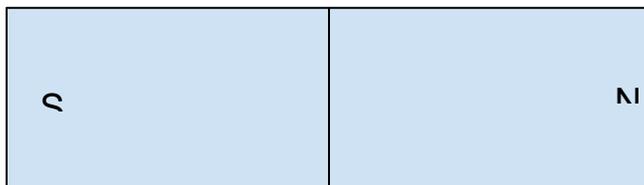


3. In terms of its electrons being **random** or **aligned** and **fixed** or **moveable**, Fill in the drawings of a nonmagnetic object below with electrons. Be sure to label the North (N) and South (S) poles on your electrons.



Iron Filings and Magnetic Fields

4. How do the iron filings align themselves?
5. Draw a picture of the magnetic field around a magnet.



Ferrofluids

6. Who first invented ferrofluids?
7. Why should you not touch a ferrofluid?
8. Why does the liquid form spikes?

Magnetic shape memory alloys

9. What is a MSM?

In the video the lines you see moving in the MSM are called twin boundaries. They are places where the pattern of the metal atoms are arranged differently. As the magnetic field is moved the boundaries shift because the atoms rearrange themselves. This is what changes the shape of the metal.

10. The uses of MSM are being developed currently. What sort of uses do you think MSMs might be used for in the future?