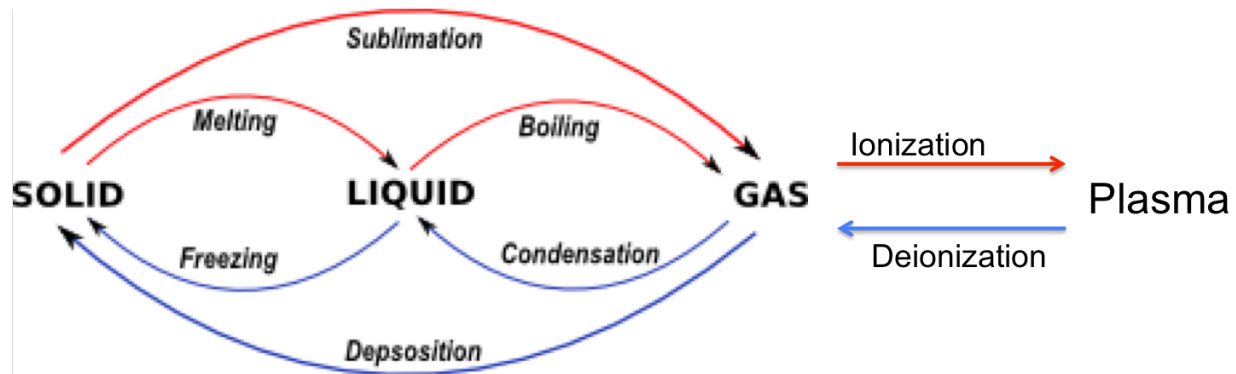


Matter

All of the stuff in the universe.

Made of protons, neutrons, and electrons.

Comes in 4 states: solid, liquid, gas, and plasma.



C.1

Use the diagram above to write the name of each process:

Process	Name	Process	Name
Liquid to Solid		Solid to liquid	
Liquid to Gas		Gas to plasma	
Gas to liquid		Gas to solid	
Solid to Gas		Plasma to gas	

C.2

For each process, give the name:

Process	Name
You put water in the freezer and it becomes ice.	
Water vapor in the air changes into water when it touches a cold surface.	
Liquid nitrogen turns into the air that you breath.	

AIR

Name _____

Dry ice [which is a solid] turns into air.	
Electrons move from clouds to the ground and turn the air into plasma.	

Part B: Introduction to AIR

Molecule	Chemical Structure	Percentage of air
Nitrogen	N ₂	78%
Oxygen	O ₂	21%
Argon	Ar	1%
Carbon Dioxide	CO ₂	0.03%
Water Vapor	H ₂ O	Depends on humidity

Air Trivia

For each statement, select a component of the air that applies best:

[If you don't know these all, that's okay]

Is the largest component of air:

Our bodies use it to make energy. Without it we die:

Can condense into drops of water on a cold soda bottle:

We have *lots* of it in the air of Fall River, but there is very little of this in the air of Arizona:

Humans blow this *out* when they breath:

Plants use this to build their structures:

Part C: Thermal Energy in Air**Temperature**

The *temperature* of the air represents the *speed of the air molecules*.

Hotter air molecules are moving faster
Cooler air molecules are moving slower

Heat Convection

Hotter (faster moving) air molecules will *rise above* other air molecules (like in a fire)
Cooler (slower moving) air molecules will *fall below* other air molecules.

Where are the air molecules moving faster: in this room or in a freezer?

Where are the air molecules moving faster: outside on a summer day or outside on a winter day?

Where are the air molecules moving faster: in this room or in an oven that is baking cookies?

What will warmer air coming out of a fire do?

What will cooler air coming out of a freezer do?

AIR

Name _____

Part D: Non-Gas forms of each of the elements of the air:

Any gas can be condensed into a liquid and frozen into a solid.
For three of the components of air, we can do that in *this room*.

Gas Form	Liquid Form	Solid Form
Nitrogen	Liquid Nitrogen	
Carbon Dioxide	NA	Dry Ice
Water Vapor	Water	Ice (wet ice)

Which elements of the air are *possible* to change into liquids and solids?

Which elements of the air can we change into liquids and solids easily in this class?

Dry Ice Questions

Why is dry ice called *dry* ice? [What makes it different from normal ice?]

Is it safe to breath the vapors coming out of dry ice:

Are the vapors colder or *warmer* than the air around them? How can you tell?