

Do Now (5 min)

1-24-11

- What does Chemistry have to do with life?

Chemistry The Basis of Life: Matter, Atoms and Molecules

1-24-11

1-24-11 Agenda

1. Do Now (5 min)
2. Objectives (2.5 min)
3. Living Material and Chemistry(20 min)
4. Matter Atoms and Molecules(20 min)
5. Closing (2.5 min)
6. Exit Slip (5 min)
7. Participation Grades (5 min)

Objectives (3 min)

- Content (The objectives you'll master today)
- **SWBAT:**
 1. *Explain how the study of living material is dependent on the study of chemistry*
 2. *Describe the relationships between matter, atoms and molecules*
- Language (How you will master the objectives)
- **By:**
 1. *Writing notes based on the PowerPoint*
 2. *Writing notes based on the PowerPoint*

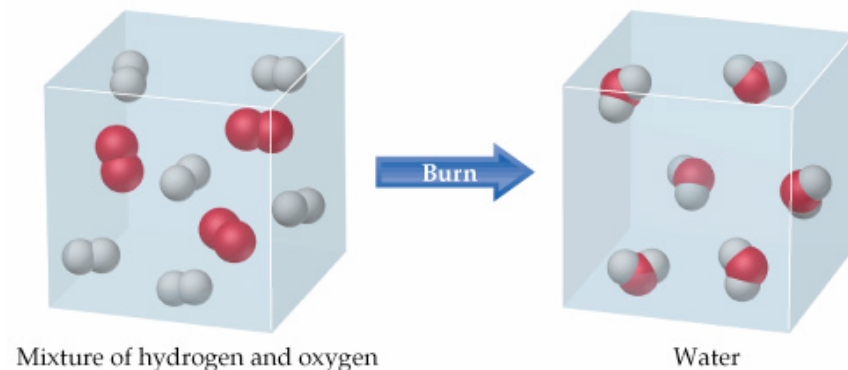
Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Chemistry: the branch of science dealing with the composition of substances and the changes that take place in their composition

In other words...chemistry is the study of what things are made of (their “ingredients”) and how those things can change (how the “ingredients” can change)

If we burn hydrogen gas (the white colored molecules) in the present of oxygen (the red molecules) we will get water H_2O



Think/Turn/Talk:

Why is the study of living material dependent on the study of chemistry? (Hint: From what materials are humans made?)

Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Matter: anything that has weight and takes up space

Element: a basic chemical substance
(presently 110 known to humans)

Atom: tiny invisible particles
(building blocks of all matter, elements, chemicals, etc.)

Think/Turn/Talk

From what is matter made?

From what are all of the elements made?

Periodic Table of Elements

1 H																	2 He						
3 Li	4 Be																	5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg	13 Al	14 Si	15 P	16 S	17 Cl	18 Ar																
19 K	20 Ca	21 Sc	22 Ti	23 V	24 Cr	25 Mn	26 Fe	27 Co	28 Ni	29 Cu	30 Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr						
37 Rb	38 Sr	39 Y	40 Zr	41 Nb	42 Mo	43 Tc	44 Ru	45 Rh	46 Pd	47 Ag	48 Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe						
55 Cs	56 Ba	57 *La	72 Hf	73 Ta	74 W	75 Re	76 Os	77 Ir	78 Pt	79 Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn						
87 Fr	88 Ra	89 +Ac	104 Rf	105 Ha	106	107	108	109	110														

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

* Lanthanide Series
+ Actinide Series

Legend - click to find out more...

H - gas	Li - solid	Br - liquid	Tc - synthetic
<div style="display: inline-block; width: 20px; height: 20px; background-color: #90EE90; border: 1px solid black;"></div> Non-Metals	<div style="display: inline-block; width: 20px; height: 20px; background-color: #4682B4; border: 1px solid black;"></div> Transition Metals	<div style="display: inline-block; width: 20px; height: 20px; background-color: #ADD8E6; border: 1px solid black;"></div> Rare Earth Metals	<div style="display: inline-block; width: 20px; height: 20px; background-color: #FFFFE0; border: 1px solid black;"></div> Halogens
<div style="display: inline-block; width: 20px; height: 20px; background-color: #FFD700; border: 1px solid black;"></div> Alkali Metals	<div style="display: inline-block; width: 20px; height: 20px; background-color: #00CED1; border: 1px solid black;"></div> Alkali Earth Metals	<div style="display: inline-block; width: 20px; height: 20px; background-color: #DDA0DD; border: 1px solid black;"></div> Other Metals	<div style="display: inline-block; width: 20px; height: 20px; background-color: #FFA07A; border: 1px solid black;"></div> Inert Elements

Living organisms need about 20 of these elements!

Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Chart 2.1 Major elements in the human body

Major elements	Symbol	Approximate percentage of the human body (by weight)
Oxygen	O	65.0%
Carbon	C	18.5
Hydrogen	H	9.5
Nitrogen	N	3.2
Calcium	Ca	1.5
Phosphorus	P	1.0
Potassium	K	0.4
Sulfur	S	0.3
Chlorine	Cl	0.2
Sodium	Na	0.2
Magnesium	Mg	0.1
		Total 99.9%
Trace elements		
Cobalt	Co	Together less than 0.1%
Copper	Cu	
Fluorine	F	
Iodine	I	
Iron	Fe	
Manganese	Mn	
Zinc	Zn	

Periodic Table of Elements

Legend - click to find out more...

- H - gas
- Li - solid
- Br - liquid
- Tc - synthetic
- Non-Metals
- Transition Metals
- Rare Earth Metals
- Halogens
- Alkali Metals
- Alkali Earth Metals
- Other Metals
- Inert Elements

Calculate/Turn/Talk:

How many pound of Oxygen and Carbon do you have in your own body?

Calculation:

Oxygen: _____ (your body weight) x 0.65

Carbon: _____ (your body weight) x 0.185

Living Material and Chemistry (20 min)

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

Atom: tiny invisible particles
(building blocks of all matter,
elements, chemicals, etc.)

All atoms are made from four different
charged parts:

1. Nucleus (the central area of an atom)
2. Electrons(-) (constantly move around the nucleus)
3. Protons(+) (a large particle in the nucleus)
4. Neutrons (0) (a particle w/ similar size to a proton)

Periodic Table of Elements

1 H																	2 He						
3 Li	4 Be																	5 B	6 C	7 N	8 O	9 F	10 Ne
11 Na	12 Mg	III A	IV A	VA	VIA	VII A											13 Al	14 Si	15 P	16 S	17 Cl	18 Ar	
19 K	20 Ca	Sc	Ti	V	Cr	Mn	Fe	Co	Ni	Cu	Zn	31 Ga	32 Ge	33 As	34 Se	35 Br	36 Kr						
37 Rb	38 Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	49 In	50 Sn	51 Sb	52 Te	53 I	54 Xe						
55 Cs	56 Ba	*La	Hf	Ta	W	Re	Os	Ir	Pt	Au	80 Hg	81 Tl	82 Pb	83 Bi	84 Po	85 At	86 Rn						
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+ Actinide Series

58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
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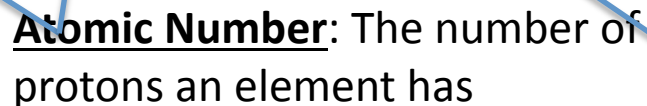
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Non-Metals	Transition Metals	Rare Earth Metals	Halogens
Alkali Metals	Alkali Earth Metals	Other Metals	Inert Elements

Objective: SWBAT: *Explain how the study of living material is dependent on the study of chemistry by writing notes based on the PowerPoint*

1. Nucleus (the central area of an atom)
2. Electrons(-) (constantly move around the nucleus)
3. Protons(+) (a large particle in the nucleus)
4. Neutrons (0) (a particle w/ similar size to a proton)

The number of protons determines the element

Protons (+) always = Electrons (-)



- What type of atom is pictured to the right? (Hint)
- Draw a diagram of the element that has 11 protons? What is it?

* Lanthanide Series	58 Ce	59 Pr	60 Nd	61 Pm	62 Sm	63 Eu	64 Gd	65 Tb	66 Dy	67 Ho	68 Er	69 Tm	70 Yb	71 Lu
* Actinide Series	90 Th	91 Pa	92 U	93 Np	94 Pu	95 Am	96 Cm	97 Bk	98 Cf	99 Es	100 Fm	101 Md	102 No	103 Lr

- Legend - click to find out more...

Tc - synthetic

Halogens

Inert Elements

Closing/**HW** (5 min)

- Did you master the following objectives?

Content (The objectives you'll master today)

SWBAT:

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Exit Slip (5 min)

- On a separate sheet of paper, write your **NAME, DATE, and BLOCK at the top.**
 1. What is the relationship between matter and the elements?
 2. What are 5 of the most common elements in the human body?
 3. Draw a diagram of a helium atom (hint 2 protons)
 4. What does the **atomic number** tell you?

Participation Grades (5 min)

- Each day **YOU** will decide the grade you deserve...Though, I reserve the right to change these.
- Your 5-point daily participation grade is based on CLA's core-values:
 - CLA Students are S.M.A.R.T.
 - S = Self-Controlled
 - M = Motivated
 - A = Accountable
 - R = Respectful
 - T = Timely
 - One point for each core-value
 - (5 points possible each day)
- What do you deserve today?