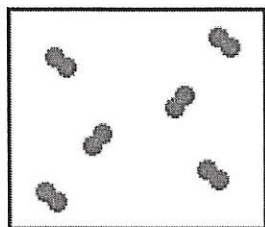


This is ACA # 2, our 2nd ACA of the Fall semester. It is OK to use your textbook, but if you can answers the questions without it that is OK too.

I recommend you print out this page and bring it to class. [Click here](#) to show a set of five ACA2 student responses, randomly selected from all of the student responses thus far, in a new window.

john , here are your responses to the ACA and the Expert's response.

1. Consider the contents of Container A and complete parts a - d below.



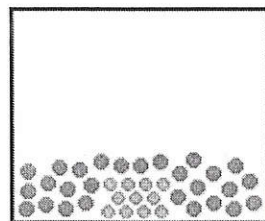
Container A

96% gas  
 4% liquid  
 82% pure subst  
 6% homogeneous  
 8% ps & hm  
 57% element  
 39% compd  
 2% both  
 8% atom  
 89% molecule

You have described the Contents of Container A: Gas, Pure Substance , Element , Molecule

Container A shows an element (a pure substance) in the gas phase that exists as diatomic molecules.

2. Consider the contents of Container B and complete parts a - c below.



Container B

88% heterogeneous  
 10% homogeneous  
 10% solid  
 89% liquid(c)  
 84% element  
 12% compd  
 72% atom  
 23% molecule  
 96% solid  
 3% liquid  
 86% element  
 9% compd  
 74% atom  
 21% molecule

Type of mixture in Container B: Heterogeneous Mixture

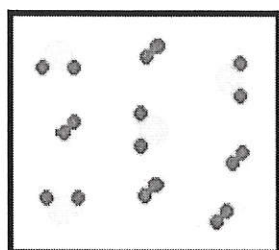
The blue component: Liquid , Element , Atom

the green component: Solid , Element , Atom

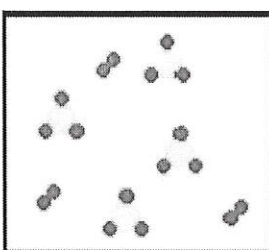
The container shows an element in the solid phase (green color) in a liquid phase of another element (blue). The solid is undissolved, so this is a heterogeneous mixture. (NOTE: If the solid dissolved the mixture would be homogeneous.)

3. Consider the contents of Container C, at time = 0 on the left and again at a later

time (on the right) and after and complete parts a - b below.



Container C



Container C

Type of change:

90% chemical change  
4% physical change

32.3% not  
1.2% NH<sub>3</sub>  
13.5% balanced  
9% balanced multiple  
45% with O<sub>2</sub> as a product.

Chemical equation that describes the reaction is:  $2\text{SO}_2 + \text{O}_2 \rightarrow 2\text{SO}_3$

The container on the left (reactants) shows a compound (yellow atom with two red atoms covalently bonded to it) and an element (the diatomic red molecule). Both substances are gases so the mixture is homogeneous. The container on the right has a new compound (yellow atom with three red atoms covalently bonded to it) and an element (the same diatomic molecule found in the container on the left). These two containers taken together represent a chemical reaction. Why are there only three diatomic molecules in the right container?

4. Without looking at your textbook complete the following table about elements;

Symbol	Name	Formula	Phase (at 25 °C)
Al	aluminum aluminum	Al Al	solid solid
N	nitrogen nitrogen	N <sub>2</sub> N <sub>2</sub>	gas gas
Br Br	bromine	Br <sub>2</sub>	liquid liquid

Al formula: Al<sup>+3</sup>, Al<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>  
Al<sub>3</sub>, Al<sub>4</sub>, CNA(7%)

90%  
correct  
3.5% CNA

N<sub>2</sub> formula: N(22%), CNA  
(7%), N<sub>3</sub>, N<sub>2</sub><sup>-2</sup>, N<sub>3</sub><sup>-</sup>, NO<sub>2</sub>

85%  
correct  
4% CNA  
3.5% liquid

Br<sub>2</sub> formula: 26% Br, CNA  
(6.4%)

63%  
correct  
9% solid  
18% gas

5a. Describe what happened when the piece of sodium metal is added to the chlorine gas? (Note: Here is another movie of the reaction.) (Here is the link to the page in your VitaSource ebook.) Either movie will be opened in a new window. After

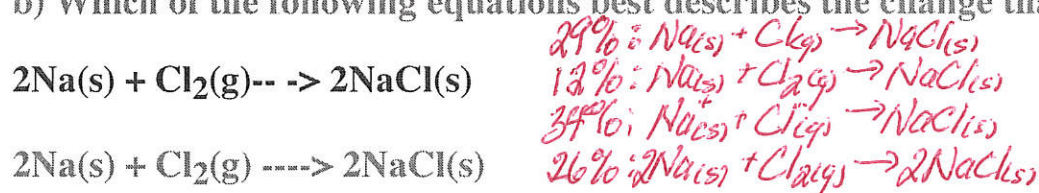


watching the movie close the window to get back to the ACA. (If the movie does not work see page 42 in your textbook.)

(NOTE: The video is in QuickTime format so you must have that player. I recommend getting iTunes as it also has the QuickTime Player. Also with iTunes you will be able to subscribe to the CHEM 1314 video podcasts that contain lectures, problem solving videos and other cool features. See the Announcements Page for more info on podcasts.)

When the solid, silvery sodium metal was added to greenish-yellow chlorine gas an immediate reaction occurred as evidenced by the bright yellow flame that appeared in the container. As the yellow flame diminished a white cloud of sodium chloride was observed. When the reaction was complete a white solid was evident.

b) Which of the following equations best describes the change that occurs.



6. Is there anything about the questions that you feel you do not understand? List your concerns/questions.

7. If there is one question you would like to have answered in lecture, what would that question be?

nothing