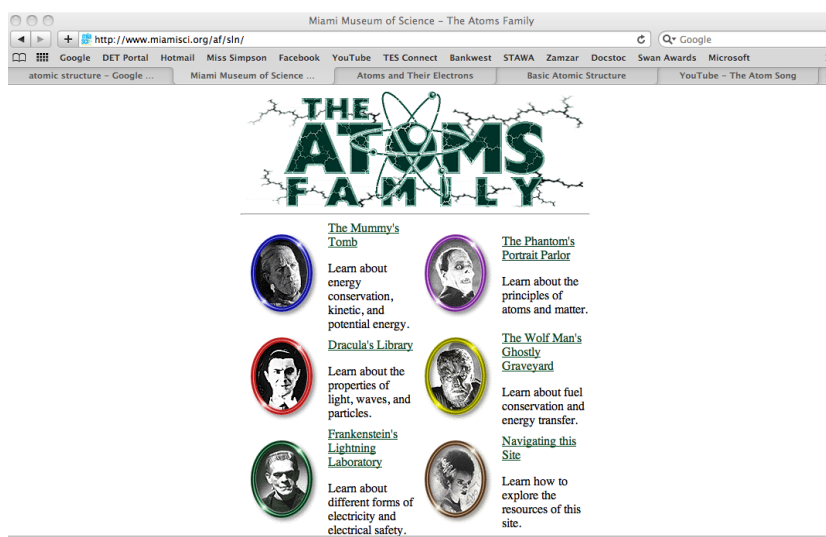


ATOMS & MATTER WEBQUEST

The following webquest is designed to give you a deeper understanding of atomic theory and the nature of matter. Please complete the activities outlined below and answer any questions on the sheet. Have fun!

Go to <http://www.miamisci.org/af/sln/> to access the website you need. If this fails to load, go to <http://www.google.com> and type in "the atoms family" in the keyword search. Select the first option from the list that is generated for you. The website should look like this:



Click on the purple photo fame titled "The Phantom's Portrait Parlor"

Click on "Phases of Matter". Read the instructions for the activity and answer the questions below.

1. Describe what happens to the number and movement of molecules when the temperature is increased in the substances below:

	Cold	Warm	Hot
Water			
Copper			
Nitrogen			

Click on the purple photo fame titled "The Phantom's Portrait Parlor" at the bottom of the page. Once you've done that, click on the "Spectroscope of an atom"

2. What charge do protons have? _____

3. What charge do electrons have? _____

4. What charge do neutrons have? _____

5. Complete the sentence:

Particles which have _____ electrical charges are _____ to each other, causing the particles of the atom to _____.

Now go to the following website -

<http://www.strangematterexhibit.com/index.html>

If this fails to load go to <http://www.google.com> and type in "strange matter", Select the first option from the list that has been generated for you. You know you are on the right track if your screen looks like the image below:



Click on the red bubble that says "ZOOM inside stuff". Click on the red arrow for a close up view of the can.

1. How many aluminum atoms would you need to line up to match the width of one human hair? _____

Slide the arrow to 10 (-8) on the scale and click on the link to show how electron microscopes work.

2. How to electron microscopes 'see'? _____

3. Depending on the type of microscope, when the electron beam hits an object, the electrons can do 1 of 3 things:

a) _____

b) _____

c) _____

4. What is a SEM? _____

5. What is a TEM? _____

Slide the arrow to 10 (-7) on the scale and click on the link to find out more about metals

6. How do crystals form? _____

7. How are crystals organized? _____

8. Why are imperfections in crystal patterns so interesting to materials scientists? _____

9. Carbon is added to iron to make which metal? _____

10. What substance is added to copper to make bronze? _____

Slide the arrow to 10 (-6) on the scale and click on the link to "get the dirt here"

11. Why are coins cleaner than paper notes? _____

12. What did the ancient Greeks and Romans put in their water to keep it clean? _____

Slide the arrow to 10 (-4) on the scale and click on the link to find out more about aluminium.

13. At what temperature does aluminium melt? _____

14. To make aluminium stronger, its often blended with another metal to create what? _____

15. By adding just 4% copper to aluminium, you can create an alloy that is how many times stronger than aluminium by itself? _____

Click on the blue home bubble at the top of the screen. When you get to the home screen click on the blue circle that says "Transform Stuff"

Select 'Iron' from the materials list.

16. What happens to iron when you heat it, beat it and treat it? _____

Select 'Carbon' from the materials list.

17. What happens to carbon when you heat it, treat it and beat it? _____

18. What can you do with carbon nanotubes? _____

Play with the combinations of treatments to complete the table below

	Heat it (tick)	Beat it (tick)	Treat it (tick)	New substance created
Silicon				
Silicon				
Iron				
Iron				
Carbon				
Carbon				

When you've completed the chart, click on the 'home' button at the top of the screen. From the home screen select "CRUSH stuff" to play some materials smackdown!

Match 1

Plastica vs. Crystal Crusader

Real Name:	Real name:
Background:	Background:
Strengths:	Strengths:
Weaknesses:	Weaknesses:
WINNER:	

Match 2

King Kon Krete vs. Iceman

Real Name:	Real name:
Background:	Background:
Strengths:	Strengths:
Weaknesses:	Weaknesses:
WINNER:	

Match 3

Chipper vs. Bauxer

Real Name:	Real name:
Background:	Background:
Strengths:	Strengths:
Weaknesses:	Weaknesses:
WINNER:	

Match 4

Incredible Bulk vs. Mr Cheese

Real Name:	Real name:
Background:	Background:
Strengths:	Strengths:
Weaknesses:	Weaknesses:
WINNER:	

Click on the blue home button at the top of the screen.

Click on the green circle that says "Improve stuff". From there select the red sign that says "Improve Equipment". It should look like this:



Click on Amorphous Metal and write down how amorphous metal can improve:

19a) Bicycle frames and sports equipment: _____

19b) Cell phones and electronics: _____

Click on the blue sign that says "Fight Cancer". Click on 'Buckyballs'

20. Who discovered buckyballs? _____

21. Why are they called the world's smallest soccer ball? _____

END OF WEBQUEST

Extension for early finishers:

Go to www.mississimpson.com and click on the 'extension' page to try one of the activities listed. Have fun!