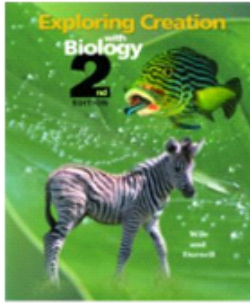


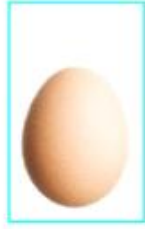
Module 5 Lab Ideas

Thursday, March 05, 2009
11:29 AM

VoiceThread <http://voicethread.com/share/558857/>

Slides	Notes
 <p>Module 05: Chemistry of Life</p> <p>Lecture 1: A Wee Bit of Chemistry</p> <p>Lecture 2: Diffusion and Osmosis; Carbohydrates</p> <p>Lecture 3: Lipids and Proteins</p> <p>👉 Lab Day</p> <p>Interactive Practice</p>	
<p>👉 Chemical Changes</p> <ul style="list-style-type: none">OsmosisPolymers<ul style="list-style-type: none">CarbohydratesLipidsProteins Enzymes	

Chemical Change



Reactions:
color change
temperature change
scent

Save the de-shelled egg for the next lab on osmosis

- 👉 Chemical Changes
- Osmosis
- Polymers
 - Carbohydrates
 - Lipids
 - Proteins
 - Enzymes



Hypertonic Solution Hypotonic Solution



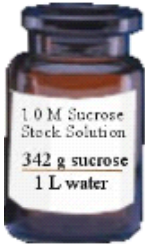
distilled water
sugar solution or salt solution

Use the egg from the chemical reaction lab to explore diffusion.

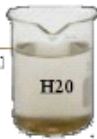


Scenario:

A florist needs to make an isotonic solution to keep his supply of flowers fresh for as long as possible.



100 ml



stock +
pure distilled



stock +
200 ml H₂O



stock +
150 ml H₂O

sugar concentration	mass		
	before	after	change
1.0 M			
0.8 M			
0.6 M			
0.4 M			
0.2 M			



stock +
100 ml H₂O



stock +
50 ml H₂O



1 M

Chemical Changes

Osmosis

Polymers

Carbohydrates

Lipids

Proteins Enzymes

What concentration will be an isotonic solution for flowers?

http://nobelprize.org/educational_games/chemistry/plastics/game/index.html

The polymers have cross links!

The polymers look like cold spaghetti!

- "Super Glue" cyanoacrylate
- circuit board epoxy resin (EP)
- automobile part polypropylene (PP)
- CD polycarbonate (PCB)
- PET bottle polyethylene terephthalate
- kids dinner set Melamine
- soft contact lens polyacrylamide (PAM)
- computer housing Polystyrene (PS)
- drainage polyvinyl chloride (PVC)
- disposable diaper Polyacrylamide
- helmet visor polymethyl methacrylate
- grocery bag polyethylene (PE)

http://nobelprize.org/educational_games/chemistry/plastics/game/index.html

Warn the students that the duck character is pretty cocky so it doesn't catch them by surprise.

<http://www.fabrics.net/fabricsr.asp>



Fiber		Smells Like	Residue
Cotton (plant fiber)	steady flame	burning leaves	easily crumbled
Linen (plant fiber)	slow ignition easily extinguished	burning leaves	brittle ash
silk (protein)	burns easily unsteady flame hard to put out	burning hair	
wool (protein)	steady hard to keep burning	burning hair	
Acetate (wood fiber)	burns readily hard to put out	wood chips	drips and hard ash
Acrylic (petroleum)	burns readily fast burn	acid smell	hard ash
polyester	melts while burning black smoke very hard to extinguish	sweet	hard ash

This is a fairly dangerous one, so adult supervision and doing it outdoors on rocks or pavement is important.

Polymer Bouncy Ball



<http://chemistry.about.com/od/demonstrationexperiments/ss/bounceball.htm>


<http://chemistry.about.com/od/demonstrationexperiments/ss/bounceball.htm>

- Chemical Changes
- Osmosis
- Polymers
- 👉 Carbohydrates
- Lipids
- Proteins Enzymes


Carbohydrates
Lipids
Proteins
Nucleic Acids

Glucose Lab


Would diabetic test strips help a diabetic at restaurants to be sure that they were given diet instead of sweetened drinks?



Results: Positive, 2000mg/dL at 30 seconds.



Result: Negative at 30 seconds



Results: Positive, 2000mg/dL at 30 seconds.

Lab instructions available at our course page.

Monosaccharide
Disaccharides
Polysaccharides
Biochemical Processes

Carbohydrates
Lipids
Proteins
Nucleic Acids

Lactose Lab

Observe, and taste, the action of the enzyme lactase as it breaks the chemical bonds of lactose, a disaccharide, into glucose and galactose, both monosaccharide sugars.





Lab instructions available at our course page.

Monosaccharide
Disaccharides
Polysaccharides
Biochemical Processes

Carbohydrates Lipids Proteins Nucleic Acids

Test for Polysaccharides (Starch)

Learn how to test for the presence of starch.

Lab instructions at our course webpage.

Monosaccharide
Disaccharides
Polysaccharides
Biochemical Processes

Needs iodine and potato.

Carbohydrates Lipids Proteins Nucleic Acids

Polysaccharide Enzyme Lab

Examine the breakdown of a polysaccharide (starch) into disaccharides using the enzyme amylase.

Lab instructions at the course website.

Monosaccharide
Disaccharides
Polysaccharides
Biochemical Processes

All the students need is a cracker for this one.

- Chemical Changes
- Osmosis
- Polymers
 - Carbohydrates
 - Lipids
 - 👉 Proteins Enzymes

