# Concept Brainstorming

## Ideas Previously Mentioned:

* Balancing chemical equations to create specific resources
* Matching a 2-D representation of a molecule to its 3-D representation
* Moving molecules as ‘key codes’ for some door mechanism
* Varying environments in terms of temperature (which changes the kinetic energy of molecules)

## Other Ideas:

Scanning of Molecules:

* Continuing off of the matching idea, we c
* ould implement a molecule “scanner” that will allow the player to scan a molecule in view. Then, once the scan has completed the core gameplay can pause to show both the 2-D and 3-D representations of the molecules, the molecular equation representing the molecule, the name of the molecule, and a brief description of what it can be used for in game.
* Related Games: ‘Metroid Prime’ series - enemy scanner that described enemies and their weaknesses, Pokemon
* Strengths:
  + Provide an explicit way for players to view molecules and their structure in-game
* Weaknesses:
  + May be difficult to develop. - [Forrest]: Likely will not be that hard. However, the difficult part will be getting it to work with the existing molecules and making it significantly different for each molecule enough such that each molecule is recognizably different
  + Gameplay will pause and be slowed down, which may detract from player immersion and playability; [Forrest]: I don’t believe this is relevant if the game itself slowly transitions between views, especially if the game is slow-paced (which, it seems like it will be). (this will also be an issue if we continually reinstantiate it. It should be created once and its action minimalized while inactive)
* Opportunities:
  + Players will be able to visually see what a molecule looks like and are encouraged to take their time to observe and analyze the molecule with regards to both inside and outside of the context of the game
* Threats:
  + Avoid making it seem too similar to existing game mechanics this will be modeled after so as to preserve originality.

Dangerous Molecules: (This would apply to basic molecules as well as)

* Introduce molecules that can be harmful to the ship (aka the player) upon contact through the form of corrosion. In addition, if the player makes contact with these molecules without breaking them down then these molecules are lost and unusable to the player
* Strengths:
  + Adds a “distractor” to the game in which the player needs to be cautious when dealing with these molecules
  + Requires the player to identify these molecules versus other molecules and react appropriately
* Weaknesses:
  + Adds complexity to the molecule representations (acidic versus non-acidic)
* Opportunities:
  + Enables players to learn a little bit about harmful molecules and identify them
* Threats:
  + The process of interaction between the ship and these molecules may not be chemically accurate. (this could be resolved by making the ship (story-wise), either more basic or more acidic. Perhaps

Enemies with the same goal as the player:

* Add enemies that have the same goal as the player, and make sure that resources (molecules) are limited.
* FORREST: What if instead of enemies we had some pressure on the player a la some sort of on-coming disaster?
* Strengths:
  + Adds an antagonist (or group of antagonists) to the game, which would attempt to increase playability by increasing the challenges present within the game
* Weaknesses:
  + AI for enemies may be difficult to develop
  + Adds no chemistry concepts to the game
* Opportunities:
  + Gives players a better sense of why the “mission” needs to be completed
  + Adds a challenge so that players don’t become easily bored
* Threats:
  + Morality concerns surrounding the ‘elimination’ of enemies, especially for an educational game

Crafting/RPG System:

* Fly around and collect molecules
* Bring them back to the base and put into a cargo hold
* Walk around molecules and interact with them in cargo hold
* Also could add small reactions in the molecular level using the molecule gun mentioned below
* Can use this for level one (don’t even go to molecular world until you need to see reactions.
* Basically, They ask for an X molar solution and you can go grab containers from a lab room in the ship. Then you can add a certain amount of any number of chemicals you have on hand on the ship. We can make some of these infinite in case the player wants to play around with the Molarities and reactions and so the player can have infinite tries Unless we want to make a cap on the number of tries. We might lock some of them away behind a “You’re not certified yet to work with this chemical!” prereq to use it. That we we can avoid people doing reactions they shouldn’t be doing yet.   
  EX: get 100 mL beaker. go to faucet, choose a number and a unit to add to the beaker (limit this based on the tool (example: some beakers can only measure to the nearest half of a mL). go to acid-base containment room and go to the box of HCl (hydrochloric acid). Do the same thing and interact using the beaker
* submit answer either by talking to someone, putting the beaker on a platform and scanning it, or putting it in a box and submitting it to a faraway lab, fade to black. fade in, receive results. If wrong enough times, you can say, I can’t figure it out (this data will be recorded for professor) and then another scientist will make it and give it back to you.

Fetch Quest System

* given specific molecule(s) to find in each level, only given basic information about molecule such as name of molecule, geometry, formula?.
* New entries in Molecudex at end of level of what you found

NOTED IDEAS \*(not new mechanics):

* Represent Lone pair electrons as some sort of object in-game.
* Display the molecules in their actual shape. We could pre-store the prefab shape of the molecules and just replace them every time a molecule goes through a reaction of sort once we get there

Level 1 Ideas:

* Player jumps into a pool of just water molecules (no fancy background. use a shiny metal texture for inside of container (Pretend we’re inside of a tank of water).
* Player collects H2O molecules (Maybe they have a limited supply of them? and then when they run out it should be right around when they’ve learned combustion reactions and other water producing reactions.
  + Another idea! (instead of shooting like they do now, maybe they can (at a later level) use selected molecules as bullets to shoot and force a reaction? (we can have a molecule button in the lower right that shows the current molecule/atom/ion and you can shoot it at things?
* Maybe for reactions player cannot pick up molecules until they are stable?
* H2O is very useful as it is the “Universal Solvent” can dissolve MANY things. Would be useful for splitting acids and bases for later levels as well. This would work well with the crafting mechanic SEE ABOVE FOR MY ADDITIONAL INFO
* Things we can learn from water: <http://www.chem1.com/acad/sci/aboutwater.html>
* <http://water.usgs.gov/edu/surface-tension.html>