

Chemical Experiments For Cubs

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As a younger child, my son LOVED mixing baking soda and vinegar in zip lock bags and watching the bags fill with CO₂. We then 'poured' the CO₂ into a plastic pail and lowered a lit match into it (by hand). The match goes out when it passes into the CO₂. But if you can get a strip of magnesium, ignite that and lower that into CO₂ - it won't go out but will instead strip the oxygen off the CO₂, leaving carbon dust floating in the pail. It is also good because it sparks brightly and makes loud popping noises. Be using magnesium - perhaps do it outside

Get a stalk of celery and cut it lengthwise about 2/3 of the way up. Get two drinking glasses and fill with water. Place them side by side. Add two different colors of food coloring into the glasses, i.e. red in one and blue in the other. Place the celery such that one part is in one glass and the other part is in the other (which is why you cut it 2/3 of the way.) Come back the next day and look at the stalks.

Get an ordinary egg and put in a glass. Pour in vinegar sufficient to cover it with perhaps 1" to spare. Let sit overnight. The next day take out the egg and feel it...the vinegar has dissolved the calcium carbonate in the shell and the shell is gone. You are feeling the membrane that lined the shell and it has a rubbery feel. Rinse with plenty of water.

Get calcium carbonate (blackboard chalk is perfect). Heat up real hot in a propane blowtorch (put the chalk in a vise). This will drive the CO₂ out of the CaCO₃. This leaves CaO (lime). When you heat up lime, it gets bright - which is where the word LIMELIGHT comes from. Drop in water when done.

Go to radio shack and buy magnets of all types (square, circular, etc). Give them to you child, along with paper clips, bobby pins, iron nails, etc You child will have a ball with it. Then get wire at radio shack and wrap many many turns around an iron nail. Connect that to a battery and you have an electromagnet. Show your child how it also picks up paper clips, etc.

Go a hardware store and get root killer. Look at the package - it should be copper sulfate pentahydrate. When you open it up, it will be blue crystals. This is good stuff to work with but be careful - poisonous - wash your hands after touching it. Anyway, drop some in a glass and dissolve in water. Then get an iron nail and sandpaper it a bit to make it shiny. Drop it in and wait a few hours. It will get copper-plated. (Has to do with the relative activity of metals) Now dissolve more in water- this time to excess, i.e. have crystals sitting on the bottom. Connect an old spoon to a wire and connect that wire to the negative pole of a DC powersupply. Connect some copper wire to the positive pole of the DC powersupply. The other end of that copper wire should be stripped clean and dropped in the water. Don't let the two touch while in the water. After a while, the copper wire in the water will start to shrink in size but the spool will get a copper coating. (Copper plated). The DC power supply can be batteries but use at least 3 volts or so.

Get a small piece of aluminum foil, about 4" square. Fold it in 1/2 two times and this will give you 1" square. Get some lye from the grocery store or hardware store (Caution - corrosive, dangerous stuff). Get a 3-4 crystals of lye and place on the foil, dead center. Place the foil on a paper plate and plate this in a sink. Add 1 drop of water to the crystals and step back. The water will dissolve the lye. The lye is now in solution and in contact with the aluminum foil. The aluminum foil is covered with a thin layer of aluminum oxide (invisible). The lye solution starts to react with the aluminum oxide and breaks it down. It then hits the foil and reacts with that. As the reaction gets going, it heats up. This causes the reactants to mix it up even faster and get even hotter. Finally, you run out of either lye or aluminum. Rinse thoroughly with water when done. Moral - never mix lye with aluminum.

A slow burn - get plain old steel wool (non-detergent) and plain old strong clorox (again - non-detergent). Place the steel wool in a large bowl or glass. Pour the clorox over it, covering it. Let sit overnight. Come back tomorrow and most of the steel wool is gone and you now have plain old rust. (P.S. this will make the clorox quite warm - let it sit in a sink overnight in case it breaks - don't squeeze the steel wool before you use it. Just put in as-is - if you squeeze it or stretch it, the reaction will go faster and become hotter). Rinse thoroughly with water when done.

Keep the chemicals away from your child - potent stuff. Don't mix chemicals on your own without knowing what you are doing. Some household chemicals and combinations thereof are EXTREMELY dangerous. Have fun and hope that helps.... Mail me if you want more experiments or have questions on the above.