A HUGE thank you to Niles West for hosting!

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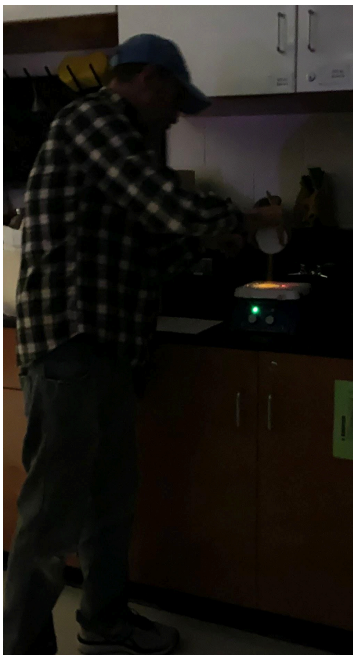
Niles West 10.2.19 ~ Presentations are listed in chronological order.

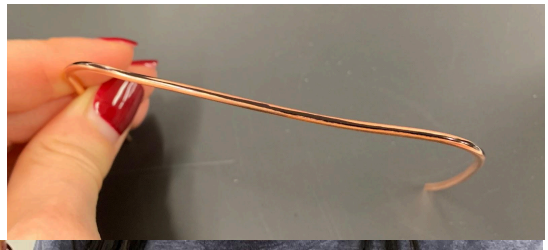
Brittany Wu, Cindy Protus, Rachael Swierz (Niles West)
Chemistry LockBox:
Breakout Review Game
EdPuzzle:
they used it for a few different opportunities (Radio Bikini nuclear video extra credit, naming practice)
Youtube - or upload your own videos



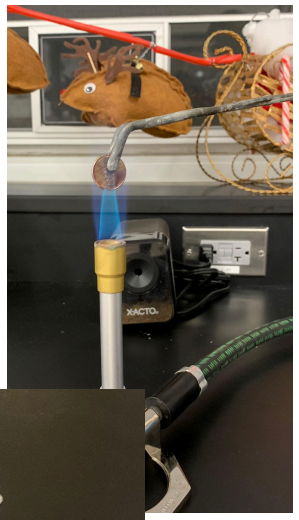
Lee Marek (Retired - Naperville)
Irradiated Salt
Electrons kicked up into the excited state
Basement goodies!

Lauren Johnson (Glenbrook South)
"Valence" Card Game - Science Ninja

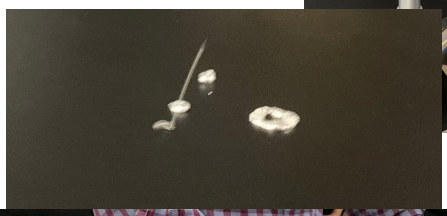
Sherri Rukes (Libertyville High School)
Chemistry Week! flyer
Rubber Band stretch (Mike Boll's write up)
12 gauge (10 gauge is for kids) copper wire - shape into staple
Twist then untwist
Slip plane - make the metal mouth stronger - log-jammed electrons
Work hardening
Return by heating in Bunsen burner and cooling
Bobby pin
Annealing - heat up to red hot, cool in air, open it up
crunch/quench- heat then dip in water
Temper - heat quench heat in candle
Migration of the atoms
Snatoms (Derek Muller)
Magnet exposed - can use as demo
New improvements



Tina Lulla (Evanston Township HS)



%copper and brass
Penny in HCl to dissolve in
What happened in 1982 to change design?
File a small ridge/divot into penny pre and post (can see copper vs zinc)
Melting point of copper is higher than zinc
Overheat - copper starts melting, zinc falls into bunsen burner
Too aggressive - can splatter and burn through clothes
Students don't have to wait more than a minute to touch zinc, penny stays hotter longer
Can catch in petri dish or beaker with water



Mike Boll (Niles West)

DEMO 1:

Modeling a substitutional alloy vs interstitial alloy by building two piles that represent the different types of alloys - and will show a difference in properties.
Substitutional model: glue together a layer of baseballs and tennis balls (~same size). Then layer tennis balls and baseballs on top of that layer to complete the model.
Interstitial model: glue together a layer of tennis balls. Place small spheres (wooden atoms from an old model kit) in the indentations on the layer of tennis balls.
Tilt both models simultaneously - you will see the layers slide off/collapse very easily. Then tilt the interstitial model and you will see that this model doesn't collapse at the same tilt-angle of the substituted model… keep tilting until the interstitial model collapses (~double the lift angle). The imperfections in the substitution model create gaps that make movement of atoms easier and the interstitial model fills spaces, making the atoms harder to move and thus the substance more rigid (steel).
Looking to make the model? Ask your tennis coach/baseball coach for old balls - or call a tennis club and tell them you'd appreciate any retired tennis balls for your classroom.
https://www.youtube.com/watch?v=1OW4ld8xRzo

DEMO 2:

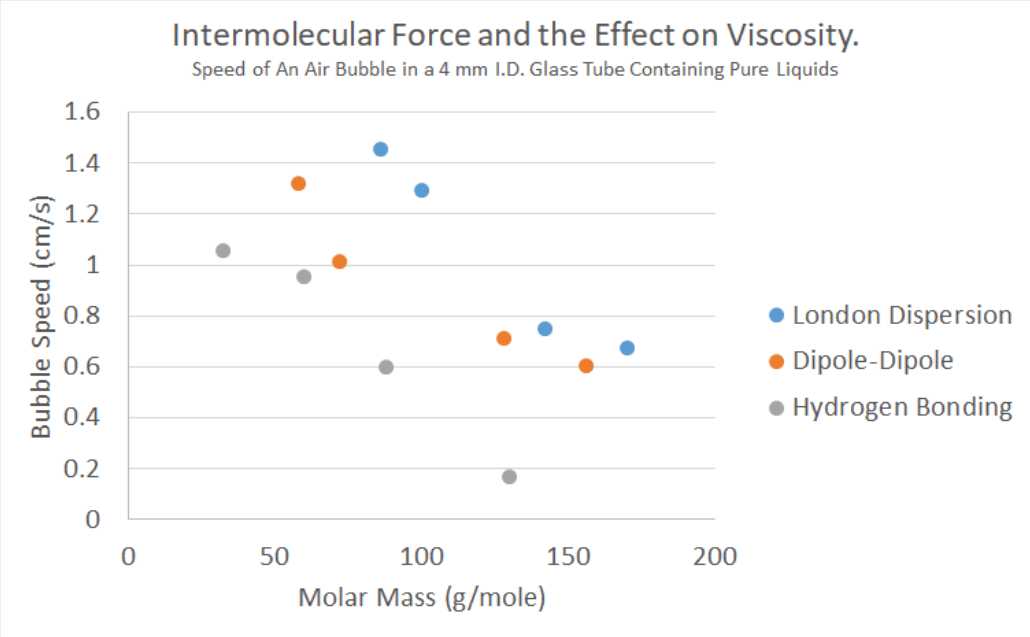
Homemade viscosity tubes to allow students to link viscosity with intermolecular forces.
Heat one end of a small diameter glass tube until it melts, and seals itself (use a very strong burner). Fill each glass tube with different solutions (series of alcohol, ketones, alkanes), Immerse the filled end in ice water to keep the liquid cool, and then heat the other end in the burner flame to seal them. You need to leave a little bit of a gap at the top of the tube otherwise the heat will travel down the glass and heat up the liquid, increasing the vapor pressure, making it impossible to seal. Each tube was labeled with the different molecule.

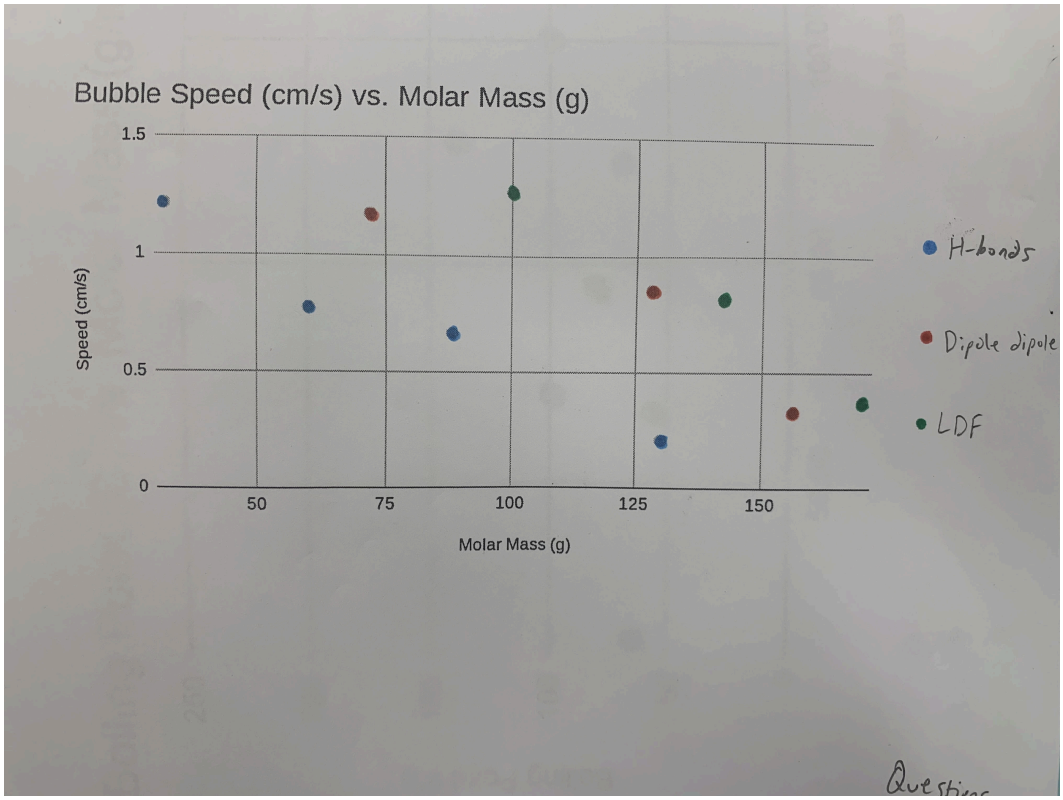
Things learned from making them: It's almost impossible to seal the tube with any substance like glue or stoppers. Many of the hydrocarbons will dissolve them and the liquid pours everywhere. It's best to put the tube in salty ice water while heating the other end to avoid

evaporation.

When students are comparing the viscosities (by looking at the speed of the bubble) they can put the tubes in front of graph paper record/time/measure data [Video of the demo by Mike on youtube.]

Here's a graph of bubble speeds based on data collected in the lab, yes for a given molar mass the IMFs are stronger for hydrogen bonding, than dipole-dipole which is stronger than London Dispersion, but size matters!





Student Data from 2019

If anyone is interested in buying a set, I can make them as a fundraiser for our science clubs. Since the colored tubes from Educational Innovations run $40 and don't allow you to collect data, I would say $100 for a set of 9 liquids seems reasonable. Let me know if you are interested. micbol@d219.org

Kevin Kopack (Whitney Young Chicago)

Need a meter cubed box (m^3) with cube missing in box (liter cube)
Cm cubed pieces go into the box
Make 1 cm^3 cube that can hold water
Moon sand race pass the water molecules back and forth
Real mole in a jar (formaldehyde) taxidermy

Jill Serling (Glenbrook South)

Smashing Thermite
Make your own!
Steel Balls - let them sit in 30% hydrogen peroxide along with salt
Wrap one of the spheres with aluminum
Larry Paek from Texas

Parin Patel (Niles West)

Glow in the dark beads and phosphorescent paper with different color uv-lasers