



Students in Mr. Sickles Academic Chemistry courses researched and created posters on the chemistry on a topic of their choosing.

## FEBRUARY IMPORTANT DATES

20th No School  
23rd-26th High School Musical  
24th PD Friday (Early Release)  
28th In-service  
28th Senior Projects



## Chemistry of Fireworks

The chemistry behind these fireworks date back to around 800 AD in ancient China and remains relatively unchanged today.

Fireworks are composed of four main components: fuel, oxidizer, binders and coloring agents. Gun powder acts as both the fuel and the oxidizer for fireworks.



Fireworks are a type of pyrotechnic device that are used for entertainment, celebrations, and other special occasions. They are often associated with fireworks displays that feature a variety of colors and effects, such as sparks, bangs, and colorful displays in the sky. The chemistry behind fireworks is quite complex and involves the use of a variety of chemical reactions to produce the desired effects.

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The colors in fireworks are produced by the presence of different metallic elements in the composition. For example, copper produces blue colors, sodium produces yellow colors, and strontium produces red colors. The colors are produced when the metallic elements are heated to high temperatures, which causes them to emit light.



In addition to the colors, fireworks also produce a variety of effects, such as sparks, bangs, and glitter. These effects are produced by the presence of different chemicals in the composition, such as aluminum and iron for sparks, and black powder for the bangs.

Fireworks are a type of explosive device that use chemical reactions to produce a visually stunning display of light and sound. The chemical reactions that produce the light and sound in fireworks are a result of the combustion of various pyrotechnic compounds. These compounds are typically a mixture of oxidizers, fuels, and various metallic salts, which produce the various colors that are seen in fireworks displays. When the firework is ignited, the fuel and oxidizers in the pyrotechnic mixture react with each other, producing heat, light, and sound. The metallic salts, which are added to the mixture to produce the desired colors, are responsible for the colorful fireworks.

Ashley Washington

### CHEMISTRY OF LED LIGHTS

**LEDs** are semiconducting materials that produce light and color. Some of these materials are based on gallium.

There are different types of LEDs. There is a P-type layer that has electron holes, and there is an N-type layer that has electrons. When a current is applied, electrons from the N-type combine with the holes in the P-type layer. When electrons fall into the holes, they release energy in the form of visible light.

LEDs can be used in many different ways. They are used in small lights, traffic lights, large video screens, sign lights, parking garage lighting, and computers.

Many colors are made by the use of different semiconducting materials, with each using different types and amounts of impurities.

This affects the energy gap between the P-type and N-type, affecting the wavelength of light produced when a current passes through the LED.

By Sarah O'Halloran

### The Chemistry of Screens

#### CRT Screens

CRT actually stands for cathode-ray tube. The inner surface of the screen is full of phosphor dots, and they emit red, green, and blue light. The phosphor dots are struck by electron beams to create the lights. These lights are very small, and fit in ways that create images. The lights are displayed in moving lines, called scan lines. That's why thick lines appear on the screens when photographed.

#### LCD Screens

LCD stands for liquid-crystal display. These screens are more commonly used today, like in smartphones. The display is made up of a material that stays in a state between liquid and solid. These crystals can either transmit or block light that passes through it. Similar to the CRT, there are red, green, and blue lights inside the screen. The polarizing plane allows light to pass at certain angles, and with the liquid crystals and light filters, images are created.

Lab 8 Project

### Chemistry of Ice Cream

#### The Structure of Ice Cream

Ice cream is made in a barrel with rotating scrapers. When the ice cream is scraped, the sides of the barrel, it freezes, but there is immediately scraped off by the scrapers. The very small ice crystals produced are dispersed throughout the mixture. We want the ice crystals to be as small as possible, because the smaller they are, the smoother the ice cream will be. Air makes up 30-50% of ice cream. If not, ice cream will be too hard.

#### Flavors and Colors

Perhaps the most important ingredient in the flavor of the ice cream, the can, depending on the flavor, should be called naturally, to maximize the flavor. It can also be synthesized in the case of artificial flavors. Flavors can be used to make the flavor. Other flavors can be used to make the flavor. Flavors can be used to make the flavor. Flavors can be used to make the flavor.

#### Stabilizers

Stabilizers, too, affect the viscosity of the liquid. They're water-soluble molecules that are commonly derived from plants, and allow a number of roles. A common one is example is sodium alginate, which is derived from brown seaweed, in a powder stabilizer. Compensates for frequently used due to its cost. Stabilizers also help reduce the melting rate of ice cream, and give it a smoother texture.

#### Fats, Proteins, Emulsion

The fat droplets in ice cream come from the cream and to make it fat is largely composed of a class of molecules called triglycerides, with very small components (less than 2%) of other molecules such as phospholipids and diglycerides. The triglycerides are made up of a glycerol molecule combined with three fatty acid molecules.

Ice cream is a type of emulsion, a combination of fat and water. The fat and water are mixed together without separating. However, in an emulsion, the very small droplets of fat are dispersed through the water, surrounding the water. The reason for which this is accomplished is a result of the chemical properties of molecules in the emulsion.

Most ice cream will have a significant volume of air contained within them, and this is what the fat, protein and emulsifier combination is vital for.

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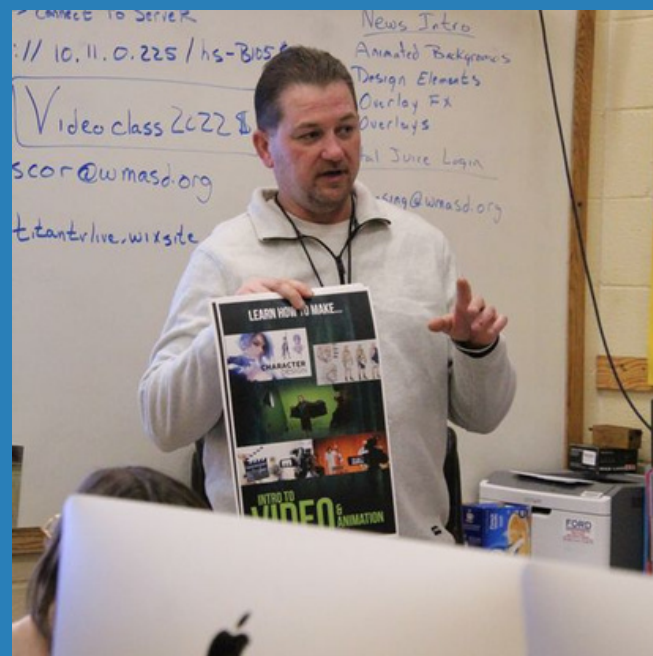


# ELECTIVE SHOW CASE STEP UP DAY

High School teachers taught mini-lessons to middle school students from West Mifflin and Duquesne. This was to inform the students of their opportunities for next year in 9th Grade,









# **WEST MIFFLIN AREA SCHOOL DISTRICT FAMILY ENGAGEMENT TEAM SEPAC & TITLE I**



**The *WMASD Family Engagement Team* is pleased to announce the next *Open Forum* for all district parents and guardians.**

**Tuesday, February 21, 2022**

**5:00 – 6:00 PM**

**WM Middle School Library**



**The goal of this team, *newly created by Federal Programs & Special Education Department*, is to discuss and develop programs, interventions, and services to meet the needs of all learners, K-12.**

**Whether your child is a struggling learner or an advanced learner, all families have obstacles and challenges to overcome. Let's talk about what we can do together as we all strive for student success.**

***Light Refreshments will be served***



# National Honor Society Induction





A 4x3 grid of 12 photographs showing students engaged in various activities. The top row shows a student in a blue shirt jumping for a basketball, a student in a white shirt with 'BLASTER' on it reaching for a ball, a student in a yellow shirt passing a blue ball, and three students working on laptops. The second row shows a classroom with a screen, two students working on a project at a desk, a student in a camouflage hoodie working on a project, and two students in a gym. The third row shows three students working on a project, a student in a colorful patterned shirt working on a project, a student pointing at a whiteboard, and a group of students giving thumbs up. The bottom row shows a student holding a phone, a group of students sitting at a desk, two students playing chess, and two students working on a project.

# TITAN STRONG



Congratulations to Tori Caldwell for being our  
Dream Team MVP for January!

## ATTENDANCE ALL STARS

