

Please mute your microphones.
You may keep your video on if you wish.
We will begin shortly.

Thank you.



FYS

Fire Extinguisher

Chemistry

Materials

Transparent glass bottle with a small neck

Vinegar

Baking soda

Candle

Matches or lighter

Paper towels





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Let's Think:

What are mixtures and compounds?

Mixture

- **Definition:** Mixtures are made up of two or more substances that are not chemically combined with each other.
- Product of a mechanical blending or mixing of chemical substances such as elements and compounds.
- **Properties of Mixtures:** components keep original properties, the proportion of the components is variable



Homogeneous vs. Heterogeneous

- **Homogeneous:** mixtures in which every compound inside of it are spread uniformly.
- **Heterogeneous:** mixtures in which components are not uniformly mixed, and you can distinguish each separate component.

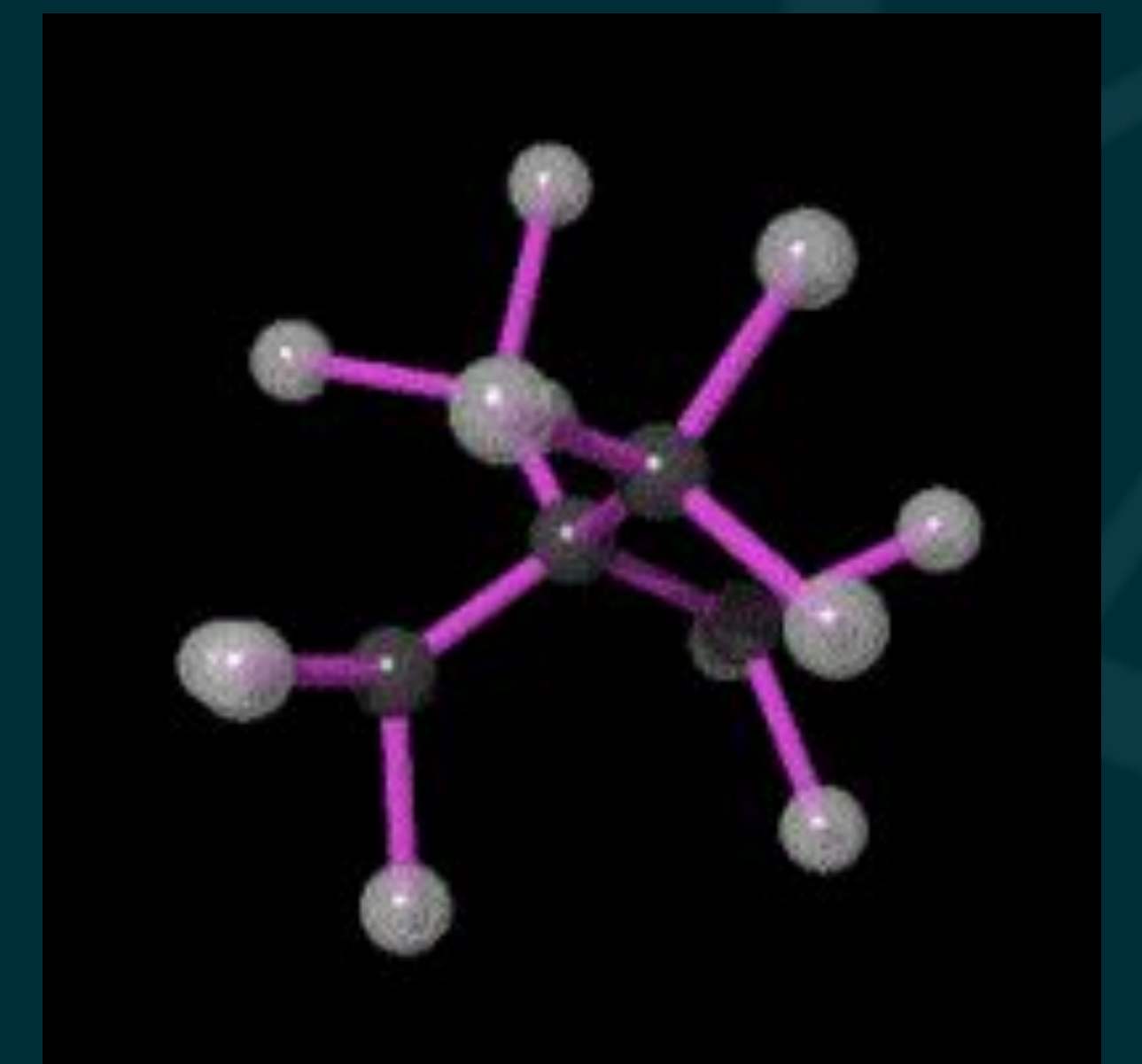
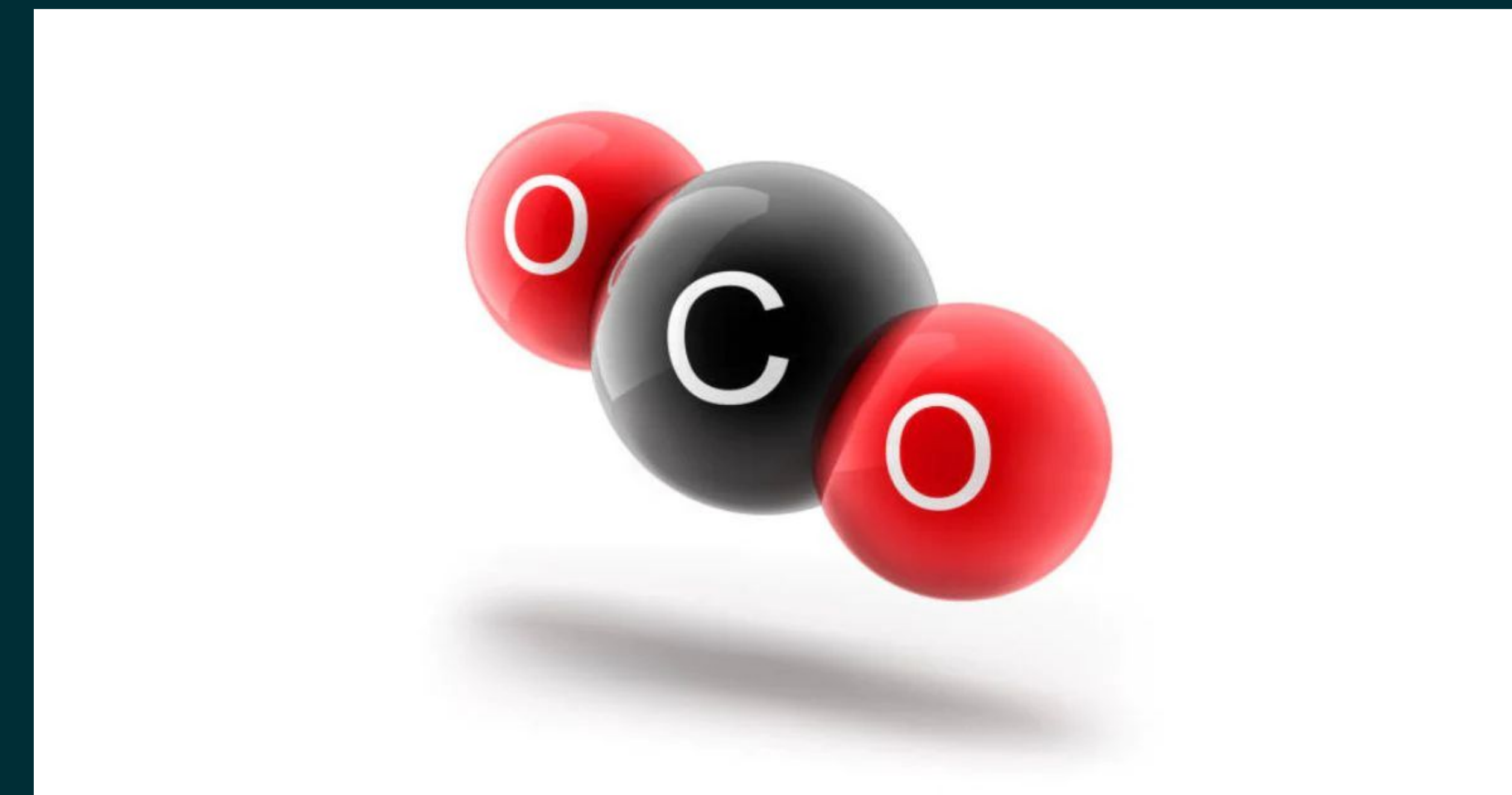


Homogeneous vs. Heterogeneous



Compounds

- A chemical combination of two or more elements (like Oxygen and Carbon) where a reaction occurs
- Compounds cannot be broken or created without a **chemical reaction**
- Compounds are created through a **chemical reaction** whereas a mixture is not
- **Give us 3 examples of compounds!**





Questions?



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Let's Think:

*What examples of chemical reactions
affect us in our daily lives?*

Chemical Reaction

- A reaction where atoms are combined, separated, and transformed into something different and new
- Chemical reactions change the properties of the reactants into something different
- **The end product of a chemical reaction may be completely different from before it started!**

Acids and Bases

- Acids and bases are two classifications of chemical substances, that differ in some ways, and they **react with each other**.
- We can measure how acidic or basic a substance is using pH strip, which gives us a number from 1-14.
- Acids have a pH below 7. They tend to be sour (think of a lemon).
- Bases have a pH above 7. They tend to be bitter and slippery (think of a soap bar).



*Does anyone know if Baking
Soda is an **Acid** or **Base**?*

Baking Soda

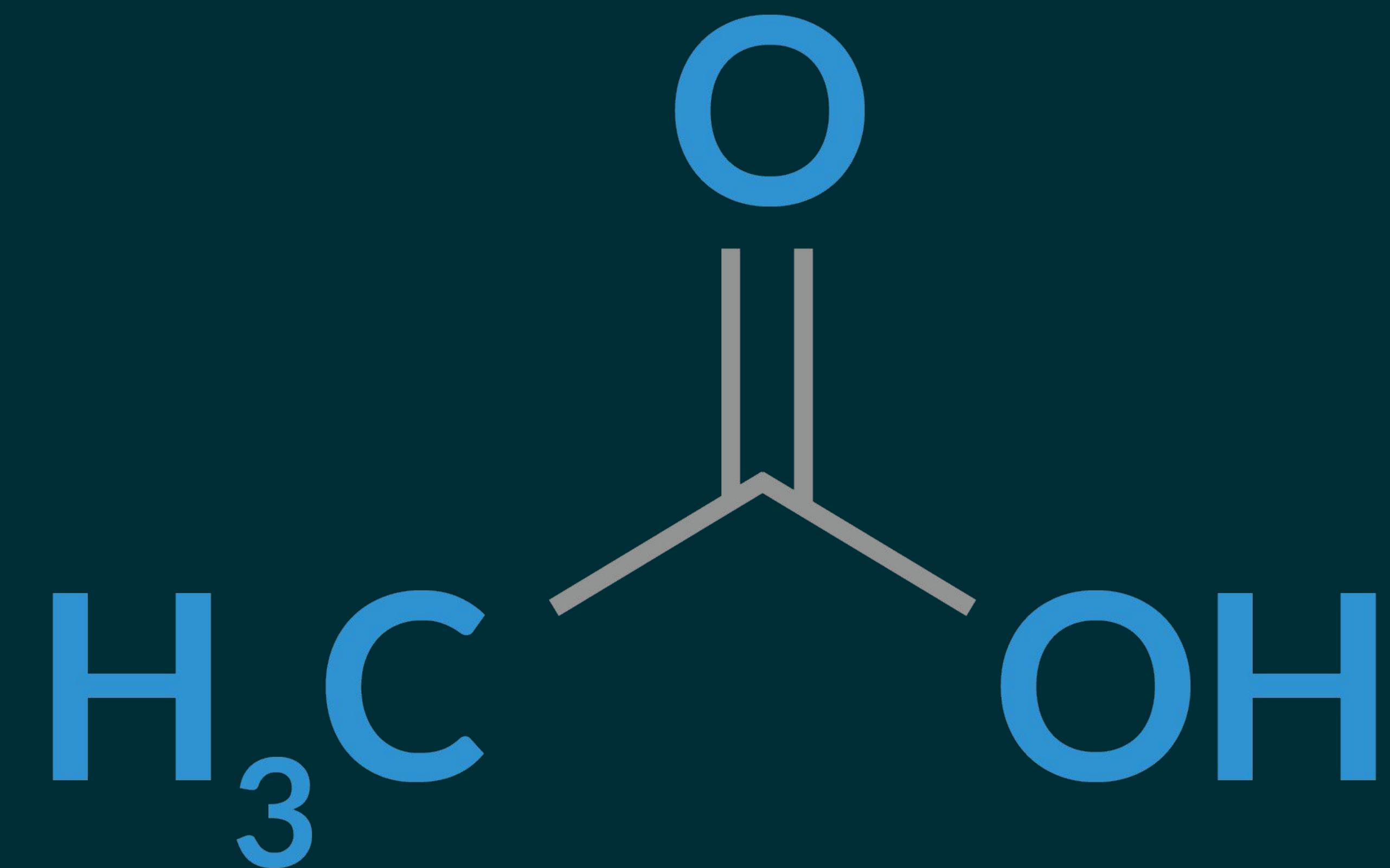
- *Baking Soda is a very popular **BASE!***
- *AKA **Sodium Bicarbonate***
- *It has a very **bitter** taste!*
- *The pH of Baking Soda is **8.4***



*Does anyone know if Vinegar
is an **Acid** or **Base**?*

Vinegar

- *Vinegar is a very popular **ACID!***
- *AKA **Acetic Acid***
- *It has a very **sour** taste*
- *The pH of vinegar is from **2-3***





Questions?



FYS

Let's Think:

What does fire need to stay aflame?

Materials

Clear jar or bottle (with a hole punched in the lid)

Vinegar

Baking soda

Candle

Matches or lighter

Paper towels



Procedure

- 1. Set a paper towel underneath the jar to catch any ingredients that spill over.*
- 2. Pour the vinegar into the jar until it is halfway full.*
- 3. Drop a spoonful of baking soda into the glass. If you are using a lid, screw it on.*



What do you see?

Describe what is happening
with the vinegar and baking
soda mixture?

Right now, we have made a
solution that includes **Carbon
Dioxide (CO₂)**

Keep this in mind!

Procedure

- 1. While the mixture bubbles and foams, light the candle with your matches or lighter.*
- 2. Put the container next to the flame. Pour out the gas, but not the liquid. If using a lid with a hole, aim the hole at the flame.*
- 3. Be amazed as the candle goes out!*
- 4. Clean up any spills with the paper towels.*



What do you see?

Reflection Questions

- 1. What compound does fire have that caused the flame to go away once Carbon Dioxide was added? (Hint: We need it to survive)*
- 2. Can you think of any other Acid-Base reactions that you may have seen?*
- 3. In your opinion, what was the most fun part of this experiment?*

See you all next week!

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