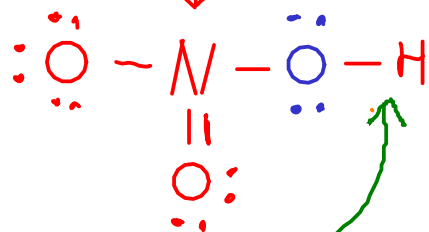
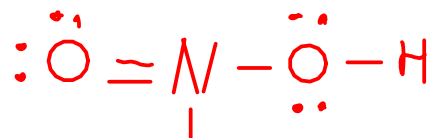


Start drawing skeleton by recognizing that this compound is an OXYACID hydrogen attached to a polyatomic ion.

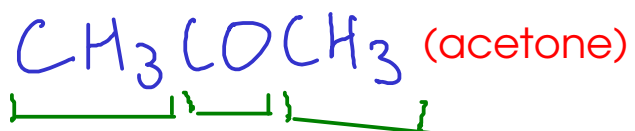


Resonance structures. The oxygen bonded to the nitrogen have a DELOCALIZED bond.

Shape? The nitric acid molecule has TWO "central" atoms - nitrogen and one oxygen, so we should describe the shape around each one. Around the NITROGEN, the shape is TRIGONAL PLANAR. The molecule is BENT around the OXYGEN atom (in blue)

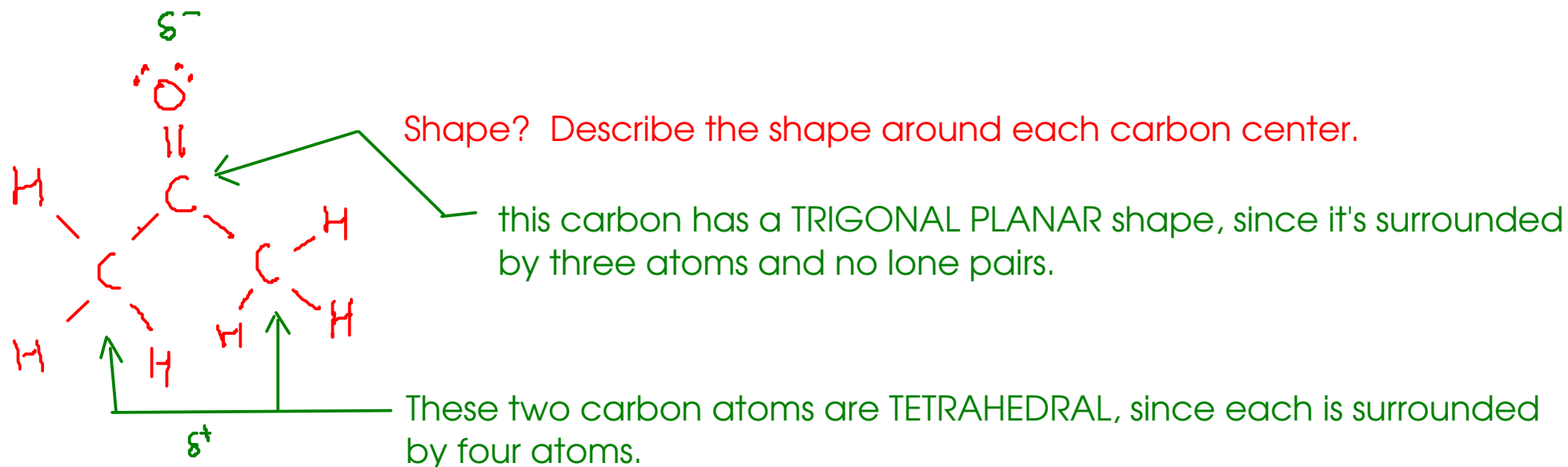
Polar? We expect a polar molecule because electron density will be pulled away from the acidic HYDROGEN atom, giving that side of the molecule a slight positive charge.

In water, the acidic hydrogen can be pulled off of the molecule by a water molecule, losing its shared electrons to the oxygen atom!



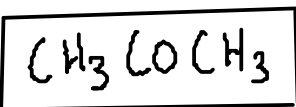
$$\begin{array}{l} \text{C: } 4 \times 3 \\ \text{H: } 1 \times 6 \\ \text{O: } 6 \\ \hline 24 \end{array}$$

Look at the formula of acetone. The way it's written gives us a clue to the structure. There are THREE carbon centers in this molecule!

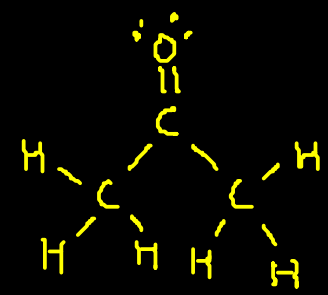
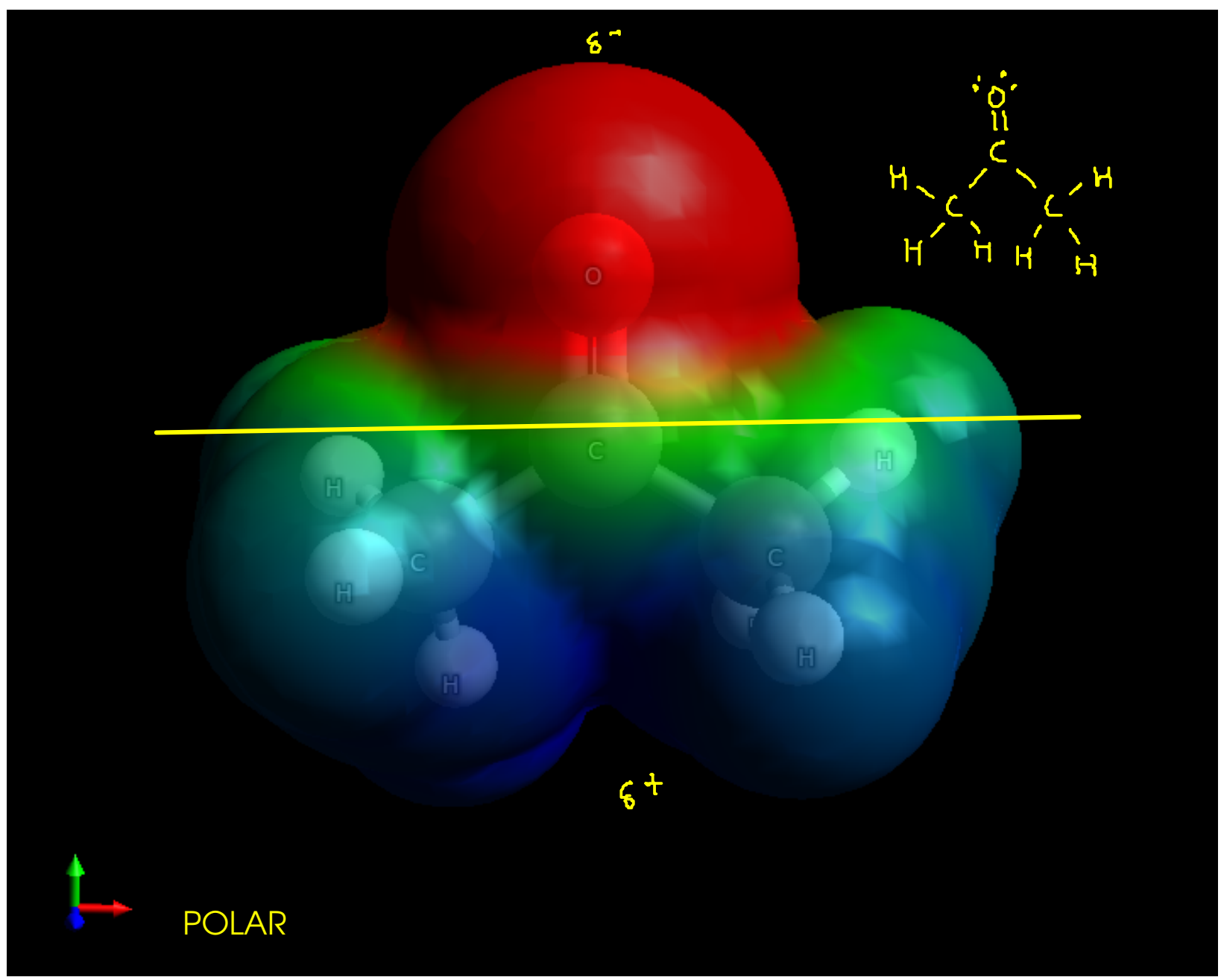


Polar? C-H bonds are nonpolar, but C=O bonds are polar. Electron density should be pulled towards the oxygen atom, creating a POLAR molecule

Experimentally, we find that acetone mixes very well with polar solvents like WATER.



"acetone"



²⁴³ POLARITY AND MOLECULAR PROPERTIES

- POLAR MOLECULES have

- higher boiling points and melting points that comparably sized nonpolar molecules.
- higher solubility in polar solvents like water than nonpolar molecules

"LIKE DISSOLVES LIKE"

- NONPOLAR MOLECULES have

- lower boiling points and melting points that comparably sized polar molecules.
- higher solubility in nonpolar solvents like carbon tetrachloride or oils