Vidyo

In the video, H2O and SO2 move very differently, where the water molecules appear to be more energetic and strongly attracted to the larger molecule while the sulfur dioxide molecules stay farther away. This probably because of the different electrostatic interactions they have with the other molecules. Water is quite polar, with oxygen and hydrogen's electronegativity difference being 1.2, while oxygen and sulfer's difference is only 0.6. I know that oxygen hydrogen bonds create strong enough dipoles that those dipole dipole interactions have a special name: hydrogen bonds. The video shows how hydrogen bonds between the water molecule and the larger nucleotide? cause the water to move around, while weaker dipole dipole bonds are what primarily affect SO2 movement. The stronger hydrogen bonds are probably able to pull the water molecules around more than the dipole dipole attractions between the large molecule and the SO2. Water is important for life because the dipoles mean that it can dissolve other polar things and ions, like salt crystals. The fact that it's polar means that it can be controlled with non-polar molecules, like how the cell membrane makes use of hydrophobic phospholipid tails to mostly separate the inside and outside of a cell. The fact that the cytoplasm and cell exterior is filled with water also helps things float around and meet each other, where as an oil filled cell would have a hard time transporting anything because there are no charges to randomly pull things around. Basically, what I'm guessing is that a polar liquid is a better "default" than a non-polar one because the charges introduce more random forces that might speed up entropy and reactions. I didn't get to the last question