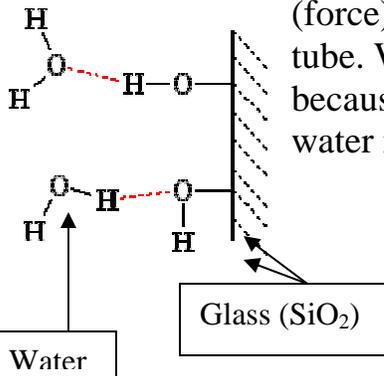




**Water** Water ( $H_2O$ ) is a polar molecule that has a negatively charged end and a positively charged end.



**Capillary Action** Capillary action is the physical affect (force) that occurs with water on the walls of a tiny thin tube. Water climbs up the walls of the tube, against gravity, because of the strong attraction of the polar (charged) water molecule and the polar surface of glass ( $SiO_2$ ).



**Masks** A mask is designed to block out UV light. In this activity, you can design your own pattern of your mask and make as many masks as you would like.



COOH

**Mercaptohexadecaonic Acid (MA)** MA molecules are used to make a self-assembled monolayer (SAM) on a wafer. These molecules have a sulfur-hydrogen (SH) on one end that can covalently bond to gold, and a (COOH) group on the top that is negatively charged hydrophilic). UV light at 254nm can break the covalent bond between the sulfur and the gold.



CH<sub>3</sub>

**Hexadecane Thiol (HT)** HT molecules also can be used to make a self-assembled monolayer (SAM) on a wafer. These molecules have a sulfur-hydrogen (SH) on one end that can covalently bond to gold, and a (CH<sub>3</sub>) on the other end that is non-polar (hydrophobic). UV light at 254nm can break the covalent bond between the sulfur and the gold.