

### Trend in bonding of Period 3 chlorides

NaCl

MgCl<sub>2</sub>

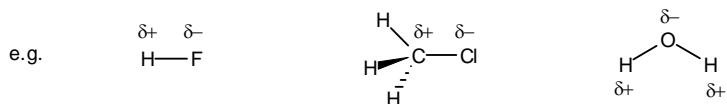
AlCl<sub>3</sub>

SiCl<sub>4</sub>

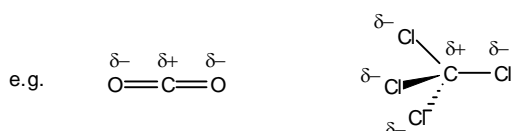
### Polar bonds and polar molecules

When the two atoms in a covalent bond have different electronegativities, the electrons are attracted more towards the more electronegative atom. This creates a slight charge separation with the more electronegative atoms being  $\delta^-$  and the less electronegative atom being  $\delta^+$ . This charge separation creates a **dipole** and makes the bond **polar**.

Many molecules with polar bonds are themselves polar and have a permanent dipole.



However, some molecules with polar bonds do not have a permanent dipole as the bond polarities cancel each other out.



Which of the following molecules are polar?

