

Question #57834, Chemistry / Other |

The solid iodine quickly changes from a solid to gas while the solid sodiumchloride needs alot of energy to change into the liquid state. why is this so?

Answer:

The reason is the different types of interactions between the particles of substances.

The Iodide consists of I_2 molecules which attract to one another. These intermolecular forces, so-called Van der Waals forces, are very weak having energy is around of 0.4 – 4 kJ/mol.

Sodium chloride is an ionic compounds which contains positively charged cations(Na^+) and negatively charged anions (Cl). These species strongly attracts to one another in comparison with iodine molecules. This is an ionic interaction with the energy being of 20 kJ/mol. Therefore NaCl needs more energy (higher temperature) to break these interionic contacts and change its physical state than the solid iodine which can easily sublimates at room temperature.