

Answer on Question #64257, Chemistry / Inorganic Chemistry

What has the lowest boiling point (H_2O , Br_2 , HBr)?

Answer:

H_2O : 100 °C (hydrogen bonds)

Br_2 : 59 °C (dispersion forces)

HBr : -66 °C (dipole-dipole forces)

Of the three compounds, HBr should have the lowest boiling point because it has the weakest IMFs (HBr is dipole-dipole). H_2O are hydrogen bonds with the oxygen, so it will be more difficult to separate the molecules into the gas phase. H_2O has the highest boiling point because it has the strongest/most IMFs. Br_2 is nonpolar compound and have dispersion force only.

$\text{HBr} < \text{Br}_2 < \text{H}_2\text{O}$

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