

. Answer the following questions related to $\text{HBr}(l)$ and $\text{HF}(l)$.

(a) In the following table, list all of the types of intermolecular forces present in pure samples of $\text{HBr}(l)$ and $\text{HF}(l)$.

Liquid	$\text{HBr}(l)$	$\text{HF}(l)$
Intermolecular forces present		

(b) The enthalpy of vaporization, $\Delta H_{\text{vap}}^\circ$, for each liquid is provided in the following table.

Liquid	$\text{HBr}(l)$	$\text{HF}(l)$
$\Delta H_{\text{vap}}^\circ$	17.3 kJ / mol	25.2 kJ / mol

(i) Based on the types and relative strengths of intermolecular forces, explain why $\Delta H_{\text{vap}}^\circ$ of $\text{HF}(l)$ is greater than that of $\text{HBr}(l)$.

(ii) Calculate the amount of thermal energy, in kJ, required to vaporize 6.85 g of $\text{HF}(l)$.

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Continue your response to **QUESTION 6** on this page.

(c) Based on the arrangement of electrons in the Br and F atoms, explain why the bond length in an HBr molecule is greater than that in an HF molecule.

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