



FINDING ΔS & ΔH FOR THE VAPORISATION OF WATER



Aim The aim of this experiment is to find ΔH and ΔS for the vaporisation of water. $H_2O(l) \rightarrow H_2O(g)$

This will be done by boiling some water in a kettle for a known time. Using the mass of water vaporised, the power rating of the kettle, and the time taken, these values can be calculated.

- Method
- 1) Place 1 dm³ of water in a kettle.
 - 2) Bring the kettle to the boil.
 - 3) Switch off and find the mass of the kettle and water.
 - 4) Switch the kettle back on and then boil for 100 seconds (you will need to prevent the kettle from switching off).
 - 5) Switch off and find the mass again.
 - 6) Record the power rating of the kettle.

Results 7) Record all your results in a suitable table, including the power rating of the kettle.

Analysis 8) Using the power rating of the kettle (watts = joules per second), calculate the energy supplied.

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9) Calculate the moles of water boiled.

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10) Calculate ΔH for the vaporisation of water using your answers to (8) and (9) in kJ mol⁻¹.

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11) Use your answer to (10) to calculate ΔS for the vaporisation of water in J K⁻¹ mol⁻¹.

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