

A chemistry student measured the boiling point of naphthalene ($C_{10}H_8$) at 231.0 degrees celsius. What is the percent error for this measurement if the literature value is 217.9 degrees celcius.

Solution:

The percent error is

$$\delta = \frac{|v - v_{approx}|}{|v|} \times 100 = \left| \frac{v - v_{approx}}{v} \right| \times 100$$

where δ is percent error, % ; v is absolute value of the measured magnitude, the dimensionality depend on measured magnitude; v_{approx} is approximate value of the measured magnitude, the dimensionality depend on measured magnitude.

Then v is 217.9 degrees celcius (it is absolute or literature value) and v_{approx} is 231.0 degrees celsius (it is approximate or measured value).

$$\delta = \left| \frac{217.9 - 231.0}{217.9} \right| \times 100 = 6.0\%$$