

A 2.50-mole sample of an ideal monatomic gas was initially at a temperature of 300 K. The gas is compressed isobarically to half of its original volume, what is the change of entropy of the gas?

$$\Delta S = nR \ln \frac{V_f}{V_i} + n C_v \ln \frac{T_f}{T_i}$$

$$\left. \begin{array}{l} PV_f = nRT_f \\ PV_i = nRT_i \end{array} \right\} \Rightarrow \frac{V_f}{V_i} = \frac{T_f}{T_i}$$

$$\Delta S = nR \ln \frac{V_f}{V_i} + n \frac{3}{2} R \ln \frac{V_f}{V_i}$$

$$\Delta S = nR \left( \ln \frac{V_f}{V_i} \right) \left( 1 + \frac{3}{2} \right)$$

$$\begin{aligned} \Delta S &= 2.5 (8.31) \left( \ln \frac{1}{2} \right) \left( 1 + \frac{3}{2} \right) \\ &= -86.0 \text{ J/K} \end{aligned}$$

04 Sep	11 Sep	18 Sep	25 Sep	2 Oct	9 Oct	23 Oct	30 Oct	6 Nov	13 Nov	20 Nov	27 Nov	4 Dec	11 Dec	18 Dec
Solutions of the quizzes can be found on the webpage: <a href="http://faculty.kfupm.edu.sa/phys/aljalal/phys102.htm">http://faculty.kfupm.edu.sa/phys/aljalal/phys102.htm</a>														
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