Answer on Question #38727

Physics – Molecular Physics | Thermodynamics

Question:

A gas occupies a certain volume at 27 degree centigrate.at wat temperature will it's volume be 3 times the original volume assuring it's pressure remains constant

Solution:

We have

$$V_1 = \frac{V_2}{3},$$

$$T_1 = 27^\circ C \equiv 300\ K$$

Gay-Lussac's law:

$$\frac{V_1}{T_1} = \frac{V_2}{T_2} \Rightarrow T_2 = T_1 \frac{V_2}{V_1} = 900\ K \equiv 627^\circ C$$

Answer:

$900\ K \equiv 627^\circ C$.