

$$(P_1, T) \longrightarrow (P_2, T)$$

$$\Delta H = \int_{P_1}^{P_2} V (1 - \alpha T) dP$$

$$P_1 = 1 \text{ atm}$$
$$P_2 = 100 \text{ atm}$$

V - molar volume

α - Isobaric coefficient
of thermal expansion

$$\Delta H \approx 71 \text{ J}$$

of $T = 298 \text{ K}$
at $P = 1 \text{ atm}$

Fe

$$V = 7.1 \times 10^{-6} \text{ m}^3$$
$$\alpha = 0.3 \times 10^{-4} \text{ K}^{-1}$$

$$\Delta S = - \int_{P_1}^{P_2 = 100 \text{ atm}} \alpha V dP$$

$$P_1 = 1 \text{ atm}$$

$$= -0.0022 \text{ J/K.}$$

298 K - decrease by 0.02 deg. at 1 atm

$$\Delta H = \int_{P_1}^{P_2} v(1 - \alpha T) dP$$

$$\Delta H \approx \Delta U$$