Chemical Thermodynamics
Joule-Thompson Expansion

- Joule-Thompson expansion
- Center of Linde process for liquefaction of gases.
Joule-Thompson Expansion

- Schematic description

- Work on high pressure side

- Work on low pressure side
Joule-Thompson coefficient

- Define Joule-Thompson coefficient
Joule-Thompson coefficient

- Use equation of state with the Joule-Thompson coefficient
Real Gases

- Evaluate behavior using real gases

- Remember virial expansion in terms of pressure
Real Gases

- Value of Joule-Thompson coefficient depends on behavior of $B_{2P}$ as a function of temperature.
van der Waals

- van der Waals expression for Joule-Thompson coefficient
Liquid $\text{N}_2$

- Make liquid $\text{N}_2$ using Joule-Thompson expansion
- Need the inversion temperature