

2.996 Fundamentals of Advanced Energy Conversion Lecture Memo

Lecture number: 4

Date: February 17th, 2004

- Mole, mole fraction, mass fraction, average molecular weight
- Gas mixture: Partial pressure and volume
Internal energy, enthalpy and entropy
 c_p change with temperature
- Entropy generation due to mixing
- Separation of gases: CO₂ sequestration
H₂ production
Minimum work for separation (Ex. C₆H₆)
- Reacting mixtures: Irreversibility
Endothermic and exothermic
Stoichiometry
- Energy balance: Enthalpy of formation
Adiabatic flame temperature
- IC engine: Introduction to Otto cycle