

2.996 Fundamentals of Advanced Energy Conversion Lecture Memo

Lecture number: 13

Date: March 17th, 2004

- **Power densities in IC engines, lithium batteries and fuel cells**
- **Over potential**
 - 1) **Ohmic overpotential**
 - 2) **Activation overpotential**
 - 3) **Mass transfer overpotential**
- **Forward and backward reactions in a simple redox process**
- **Standard activation energy for the anodic and cathodic reactions**
- **Transfer coefficient**
 - 1) **Changes in the free energies**
 - 2) **Changes in the forward and backward reaction rates**
- **Electrochemical reaction rate**
- **Butler-Volmer Equation**