Materials in Design and Manufacturing

- Survey of Materials
- The Concept of Concurrent Engineering
- Environmental Aspect Life Cycle Assessment (LCA)





Processing of Metallic Materials

Processing of Non-metallic Materials



figure 5.3

Environmentally Conscious Concurrent Engineering



Recycling of Engineering Materials

- Metals
 - New scrap from manufacturing processes.
 - Segregated scrap, such as trimmings, beverage cans.
 - Mixed scrap, mixed alloys.
 - Postconsumer scrap.
- Plastics
 - Primary recycling, in-house thermoplastic scrap
 - Secondary recycling, to original application or "plastic lumbers."
 - Tertiary recycling, feedstock for polymerization or as a fuel.
 - Quaternary recycling, incineration to recover energy content.
- Ceramics
 - Supplement starting material, glass.
- Composites
 - Greatest challenges.