

# Homework 1

## INTRODUCTION

### Task 1.

Select ONE of the following modern items or devices and conduct an internet search in order to determine what specific material(s) is (are) used and what specific properties this (these) material(s) possess(es) in order for the device/item to function properly. Finally, write a short essay in which you report your findings:

- a) Cellphone/ digital camera batteries
- b) Cellphone displays
- c) Solar cells
- d) Wind turbine blades
- e) Fuel cells
- f) Automobile engine blocks (other than cast iron)
- g) Automobile bodies (other than steel alloys)
- h) Space telescope mirrors
- i) Military body armor
- j) Sports equipment
  - Soccer ball
  - Basketball
  - Ski poles
  - Ski boots
  - Snowboards
  - Surfboards
  - Golf clubs
  - Golf balls
  - Kayak
  - Lightweight bicycle frames

## **Task 2**

1. List six different property classifications of materials that determine their applicability.
2. Define what is meant by a structural element of a material, and then cite two structural elements.
3. (a) Cite the four components that are involved in the design, production, and utilization of materials.  
(b) Now, briefly describe the interrelationships between these components.
4. Cite three criteria that are important in the materials selection process.
5. List the three primary classifications of solid materials, and then cite the distinctive chemical feature of each.
6. (a) Briefly define “smart material/system.”  
(b) Briefly explain the concept of “nanotechnology” as it applies to materials.