Bonus 2

Brandon Lampe
ME 571 - Material Science

September 30, 2014

1 Define and provide examples of isotropic and homogenous materials:

1.a isotropic materials:

- definition: a substance having material properties (e.g., Young's modulus and Poisson's ratio) that are uniform in all spatial directions i.e., they properties do not vary with direction;
- examples of isotropic materials: steel, glass;
- examples of anisotropic materials: carbon fiber, wood;

1.b homogenous materials:

- definition: a material having uniform composition and properties at every point in the material. Homogeneity of a material is dependent on the scale at which the material is observed e.g., atomic, crystal, bulk scales;
- examples of materials with a homogenous crystal structure: halite, gold
- a uniform sandstone (e.g., quartz bound together with a calcite matrix) is typically not isotropic (i.e., properties vary with direction) but the bulk material is homogenous.