ENGR 145 Fall 2023
Homework Set #7
Due Tuesday, Oct. 31

CR Questions and Problems:

15.9 Is it possible to produce a continuous and oriented aramid fiber–epoxy matrix composite having longitudinal and transverse moduli of elasticity of 35 GPa (5×10^6 psi) and 5.17 GPa (7.5×10^5 psi), respectively? Why or why not? Assume that the elastic modulus of the epoxy is 3.4 GPa (4.93×10^5 psi).

15.19 For a polymer-matrix fiber-reinforced composite:

(a) List three functions of the matrix phase.

(b) Compare the desired mechanical characteristics of matrix and fiber phases.

(c) Cite two reasons why there must be a strong bond between fiber and matrix at their interface.