1. Referring to the Gillham “TTT” diagram shown here:
   a. Explain the phenomena of gelation and vitrification.
   b. Define the temperatures $T_{go}$ and $T_{ge}$, and explain the lines denoted $v$ and $g$ - why do they have the shapes they do?
   c. Why does the intersection of the $v$ and $g$ lines represent the maximum safe storage temperature?
   d. Why does the cured laminate have a $T_g$ approximately the same as the cure temperature?

2. Explain and develop analytical expressions for the two lines in the predictions for strength of unidirectional composites shown here.

3. Outline an analytical model for the time to break of a viscoelastic solid containing a spherical void and subjected to a triaxial tensile stress.

4. Explain the various lines and features in the Sternstein diagram shown here. Why does the intersection of the two loci represent a “mechanically-induced ductile-brittle transition?”