3.032 Mechanical Behavior of Materials

Fall 2007

14 Pa

very low stress!!

Fe_3Be

Image removed due to copyright restrictions.

Please see Fig. 11.22 in Hosford, William R. Mechanical Behavior of Materials. Cambridge, England: Cambridge University Press, 2005.

E_{aust} = 525 Pa?

E_{mart} = 175 Pa?

Source: Hosford, Mechanical Behavior of Materials. From R.H. Richman in *Deformation Twinning*, TMS-AIME, 1963.

3.032 Mechanical Behavior of Materials

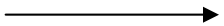
Fall 2007

Experiment to measure how long a superelastic NiTi file could survive rotating/bending fatigue.

Images removed due to copyright restrictions.

Please see Fig. 1 and 8a, b in Young, Jeremy M., and Van Vliet, Krystyn J. "Predicting *In Vivo* Failure of Pseudoelastic NiTi Devices under Low Cycle, High Amplitude Fatigue." Journal of Biomedical Materials Research B 72B (2005): 17-26.

SEM micrographs of failed NiTi file show that failure starts from the inside out.



Source: JM Young and KJ Van Vliet. Predicting in vivo failure of pseudoelastic NiTi devices under low cycle, high amplitude fatigue. *Journal of Biomedical Materials Research Part B: Applied Biomaterials* **72B**: 17-26 (2005).

3.032 Mechanical Behavior of Materials

Fall 2007

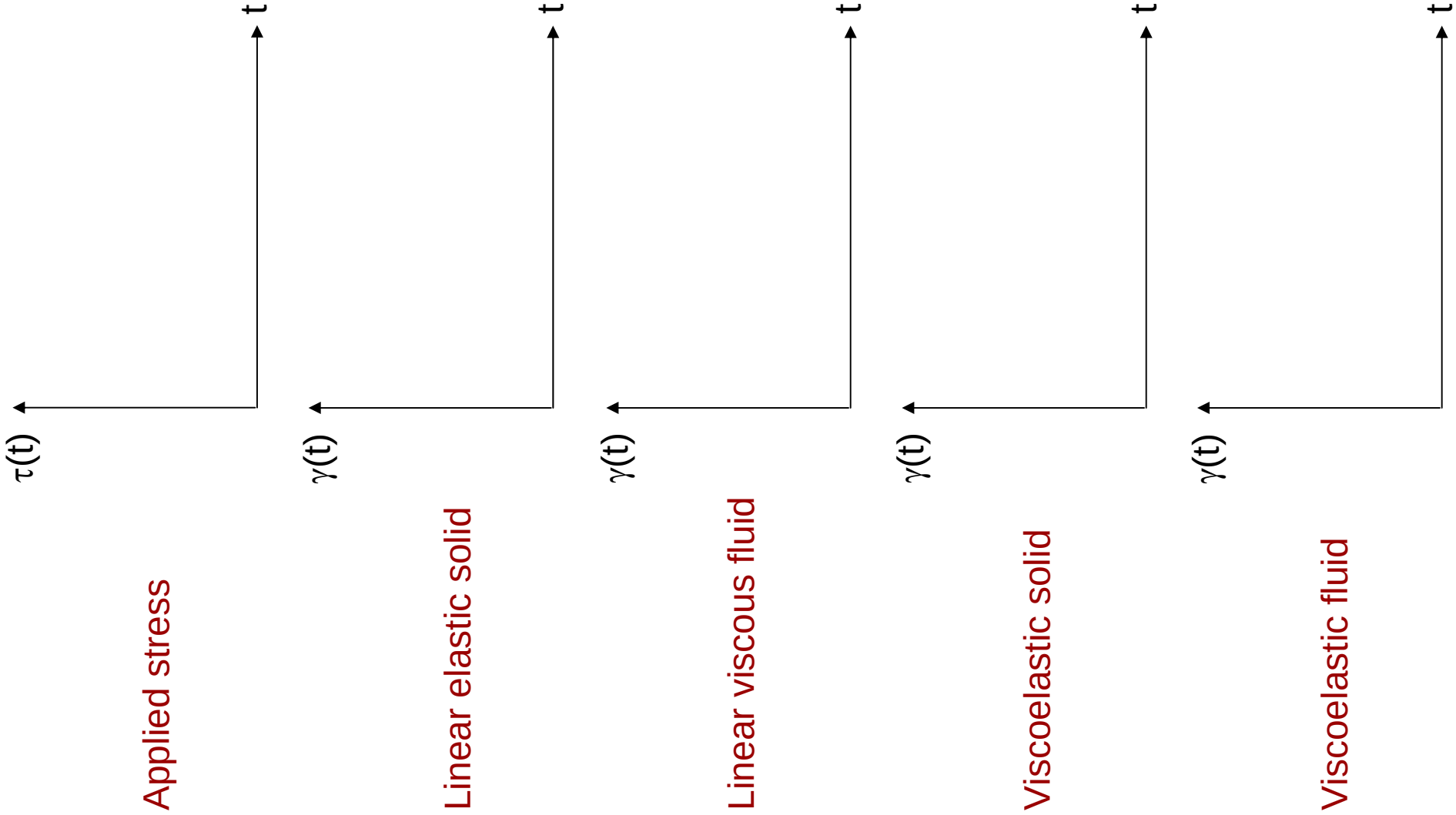
Fluid shear viscosity as measured by parallel plate Couette experiment:

Image removed due to copyright restrictions.
Please see http://content.answers.com/main/content/img/McGrawHill/Encyclopedia/images/CE733900FG0010.gif

Source: Science and Engineering Encyclopedia (2006 online)

3.032 Mechanical Behavior of Materials

Fall 2007



After Young and Lovell, Introduction to Polymers (1991) & Science and Engineering Encyclopedia (2006 online).