Ultrasonics 2017
Exercise 9

1. What are the V(z)- and V(f)-measurements used in ultrasound microscopy?

2. The speed of a longitudinal wave in oil is 1350m/s and the density is 850kg/m³.
   a) What is the critical angle from oil to water for a planar wave?
   b) If the angle of incidence of the wave to the oil-water interface is 35°, what is the transmission coefficient α_t?
   c) What kinds of wave modes can appear in aluminium when the angle of incidence of the wave from oil is 10°? (Al: c_{long} = 6400m/s, c_{shear} = 3100m/s, $c_{Rayleigh}$ = 2900m/s).

3. You are measuring plastic (c_{long} = 2500m/s) rods that are roughly 2x2mm in side length. You want to find the possible structural deformations in the material. What kind of technique would you use? How would you use it?