1. what do you think structure refers to, and how to determine or describe it?

The way different pieces of materials put together

Periodic organization of small building blocks. (short range, long range)

Different length scale, nano, micro, macro

How to determine:

Macrostructures, look at the texture.

Microstructure, electron microscopy.

How to describe it: relatively orientation wrt. Each other. , size, composition, periodicity

2. what are some examples of material property:

Mechanical – elasticity, viscosity, stiffness, hardness.

Electronic- conductivity, capacitance, inductance,

Optic – reflectivity, conductivity, absorption, refractive index

Magnetic: spin, magnetostriction, ferro/antiferro magnetic, hysteresis

Thermal: conductivity, heat capacity, thermal expansion.

Radioactivity: half life, decay modes.

3. what data related problem is characterizing facing

Instrument problem, noise to signal ratio

Small sample size

Measurement sensitivity, can't distinguish two peaks if they are close.

Difficult to visualize multidimensional data.

Data analyzing (different models give different results.)