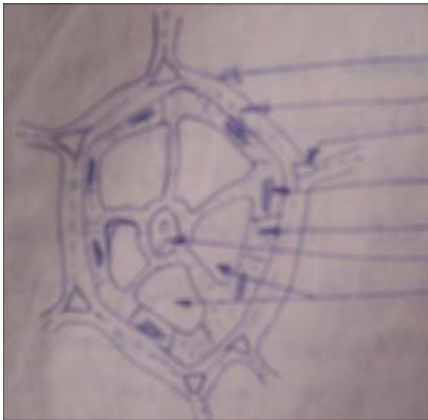


Engineering properties and cell

The behaviour of biomaterials are dependent on the cell behaviour. (A brief description of cell structure with diagram is necessary). The cell wall has elastic behaviour. It is capable of expanding and contracting in response to pressure. This is partly responsible for the elastic behaviour of biomaterials. The liquid content of the cytoplasm and the fluid (air content of vacuoles) exhibit the rheological behaviour materials etc.



Cell wall
Middle lamella
Inter cellular
Chloroplast
Cytoplasm
Nucleus
Vacuoles

Diagram of any cell with labeling

Basic characteristics of biomaterials

- a. Non-homogeneous – Properties vary along a dimension/direction
- b. No-isotropic – Properties vary with different directions
- c. Moisture dependent – behaviour is dependent on the moisture content
- d. Temperature dependent – properties vary with levels of heat applied
- e. Time dependent – maturity with time or behaviour differs with time

- **Physical** – Size and Shape – useful in handling, separation and storage
- **Mechanical** – Hardness, friction coefficient – useful in size reduction and conveying operations
- **Thermal** - Thermal Conductivity and diffusivity – useful in heating and cooling operations
- **Electrical** - Conductivity and resistivity - separation and determination of moisture content

Geometric characteristic used in describing different shapes

- Round - approaches circular shape
- Long - longitudinal length greater than the lateral.
- Oblate - flattened stem end
- Oblong - vertical diameter greater than horizontal diameter
- Conic - tapered towards the apex
- Ovate - Egg shaped and broad at tail end
- Regular - Horizontal section approaches a circle