

# Non – living component

LAB:13

## Crystals

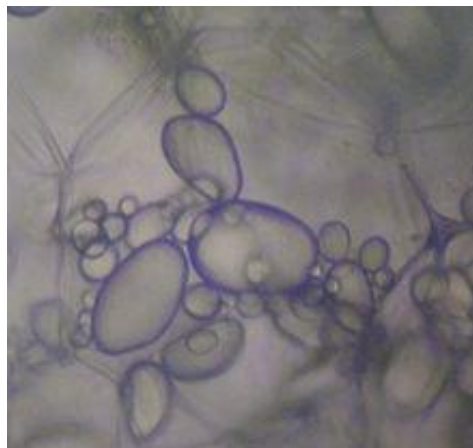
Crystals very often appear in plant cells , being formed within vacuoles and widely distributed . generally such crystals are comprised of **hydrated calcium oxalate**, which develops in order to protect the cells from the toxicity of the oxalic acid produced in plant metabolism , or act as calcium reservoir. **Calcium carbonate** crystals also appear frequently in vegetative tissue (cystolith crystals), probably having a regulatory role regarding calcium concentration . other substances , such as **silica** , **calcium phosphate** , **organic substances** , etc. , could also appear as crystalline materials in plant.

### The type of crystals found in plant cell:-

- 1-**Prismatic crystals** :( miniaturized sugar grain) in onion scale.
- 2-**Raphides crystals** : needle – shape in *Mirabilis* stem
- 3-**druses crystals** : (like a glistening diamond) in *Tilia* stem
- 4-**cystolith crystals** : ( consist of stalk and body ) in *Ficus* leaf

## Starch grain

Starch is always associated with plastids in all plant cells. This is true even the starch grain becomes so massive that no other aspect of the plastid is visible with the light microscope . starch grain is easily seen in potato tissue.



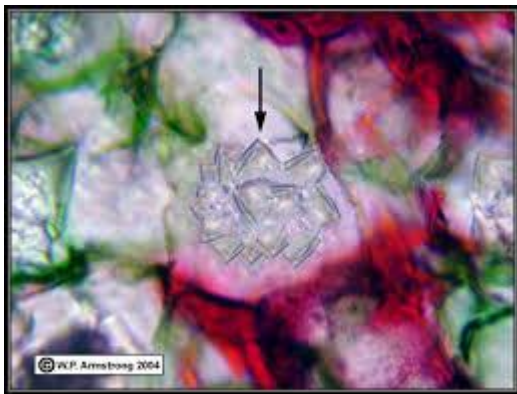
## Type of crystal



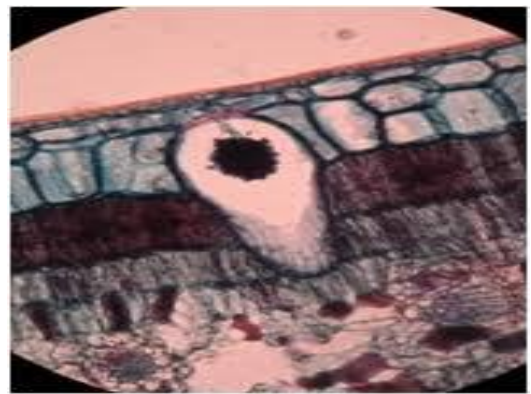
**Prismatic Crystals**



**Raphides crystals**



**druses crystals**



**cystolith crystals**