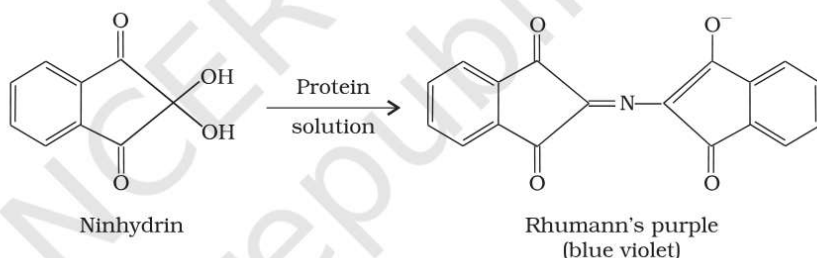
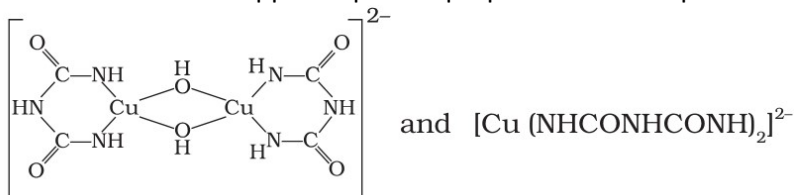


Other tests instead of ninhydrin:

biuret test: alkaline copper sulphate - purple colored complex



Xanthoproteic test:

Conc. Nitric acid + Heat --> yellow color. --> cool + add 10M

NaOH --> orange color

Q1 Mention the limitations of the ninhydrin test.

The fact that ninhydrin reacts not only with ($\alpha + \epsilon$) amino groups but also with ammonia nitrogen and other free amines is one of the test's limitations.

Furthermore, soil residues contaminate archaeological and historic protein fibres, which are difficult to remove and affect test results.

Q2 Which amino acid does not react with ninhydrin?

Ninhydrin is utilised in protein amino acid analyses. Except for proline, most amino acids are hydrolyzed and react with ninhydrin.

Q3 Which colour is developed in ninhydrin test?

The reaction of ninhydrin with an amino acid results in the creation of Ruhemann's purple, a dark purple compound.

Proline - reason - secondary amine bulkier to attack.

Experiment 1:

Pipette - calibrated To-Deliver (TD)

Last drop should not be blown out

Process - dip - suction, place finger, clean the tip, dip again, rinse extra, pour into other, touch tip to the wall of container and hit for

10 times

Volumetric Flask - prepare standard solutions or in diluting the

samples, calibrated to contain ,

Burette - deliver a variable amount of solution

Density of water decrease with temperature after 15 degree Celsius.

- Random error occurs due to chance. Even if we do everything correctly for each measurement, we'll get slightly different results when measuring the same item multiple times.
- Systematic error is when the measurement system makes the same kind of mistake every time it measures something. Often, that happens because of a problem with the tool we're using or the way we're doing the experiment. For example, a caliper might be miscalibrated and always show larger widths than they are.

A volumetric pipette, bulb pipette, or belly pipette allows extremely accurate measurement (to four significant figures) of the volume of a solution. These pipettes have a large bulb with a long narrow portion above with a single graduation mark as it is calibrated for a single volume (like a volumetric flask).

A graduated pipette is a pipette with its volume, in increments, marked along the tube. It is used to accurately measure and transfer a volume of liquid from one container to another. It is made from plastic or glass tubes and has a tapered tip. Along the body of the tube are graduation markings indicating volume from the tip to that point. A small pipette allows for more precise measurement of fluids; a larger pipette can be used to measure volumes when the accuracy of the measurement is less critical.

Experiment 2: Ninhydrin is irritant and biologically active reagent. It is dissolved in alcoholic solution which are flammable. Stain skin.

1. **DFO (1,2-diazafluoren-9-one)**: This chemical is employed to locate latent fingerprints on **porous surfaces**. When illuminated by **blue-green light**, fingerprints treated with DFO fluoresce or glow, making them easier to detect ¹ ².
2. **Iodine**: Iodine vapor can be used to visualize latent prints on porous surfaces. It forms a temporary brown color when it reacts with the fatty acids and oils in the fingerprint residue.
3. **Cyanoacrylate (Super Glue)**: Cyanoacrylate fumes react with the moisture in latent prints, creating a white polymer that adheres to the ridges. This technique is commonly used on nonporous surfaces like glass or metal.
4. **Silver Nitrate**: Silver nitrate reacts with the chloride ions present in latent prints, forming a dark brown or black stain. It is particularly useful for detecting prints on paper.
5. **Fluorescent Powders**: These powders fluoresce under specific wavelengths of light (such as UV or blue light). They enhance the visibility of latent prints on various surfaces ³.

Ninhydrin : L-Alanine both 25mmol/L in 2:1 ratio

Ninhydrin is a pale yellow solid

Chemicals present in fingerprints include NaCl, amino acids, glucose, lactic acid and ammonia

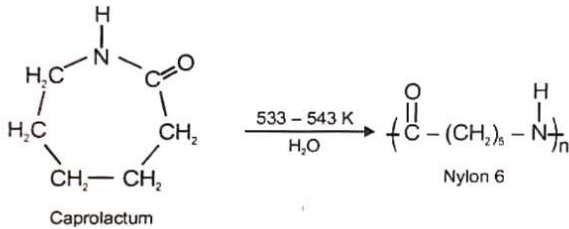
Nylon 6-6:

Invented by Wallace Carothers working for DuPont.

Nylon 66 - polyamide, used in textile and plastic industries, brushes, surgical sutures, tennis strings, and fishing lines, clothing, carpets, tire cords, conveyor belts, and brushes.

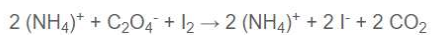
Nylon 6 -

manufacture of carpets, tire cords, apparel, hosiery, upholstery, seat belts, parachutes, ropes, and industrial cords.



Experiment 4:

Beer-Lambert's Law = $A = \epsilon cl$

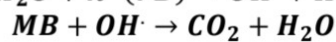
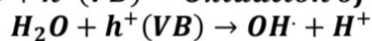
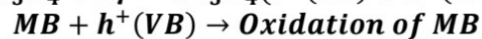
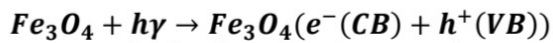


UV-vis spectroscopy - UV and visible light

Max absorbance at 350nm wavelength

First Order reaction

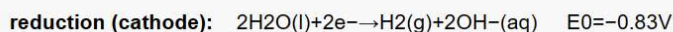
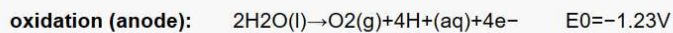
Experiment 5:



zMax absorbance at 665 nm

First Order

Experiment 6:



Experiment - 2:

3250 - N-H

2800-2900 - C-H stretch

1750 - C=O stretch

1500 - C-N stretch

600 - C-Cl stretch