

NEATH PORT TALBOT COLLEGE COLEG CASTELL NEDD PORT TALBOT

School of Maths & Science Science Practical

Hair Analysis

◆ Aim

At the end of this experiment you should be able to:

1. Examine different hair and fibre types and highlight and sketch any unique features.
2. Analyse the results and assess their value as evidence in court.

◆ Introduction

Though hair varies greatly, on average we have 100,000 hair follicles. Each follicle is made of epidermal cells and contains a three layered hair. The outer layer of this hair shaft is the protective cuticle with overlapping scales. Inside lies the hair cortex comprised of keratinous protofibrils wound together forming micro- and macro fibrils, tightly woven protein fibres giving the hair its strength and colour depth. The spongy middle core or medulla, a spongy mass which varies in size within human hair types, connected to the hair root. Hair grows as a result of the cycle of new cells forming, maturing and dying, moving on ever upwards. Hair can be moved and transferred in a number of ways.

One – way transfer where a hair may be transferred onto something or someone else.

Two-way transfer where hairs from two different people are exchanged.

Secondary transfer where transfer occurs independently of the event under investigation (White, 2004)

Hair may be shed naturally with a shrivelled root still intact, or it may have been removed forcibly where the root may be absent or damaged, hair may also have been cut. This limits investigations to the hair shaft only, in cases where no root is present. If hairs are found at a crime scene, reference samples are required from victims, witnesses and suspects in order to be used as a source of comparison. Reference samples are removed by trained personnel in such circumstances.

◆ Safety

Control Measures

- The wearing of safety **glasses** and a **laboratory coat at all times** will be sufficient to take account of most hazards and significant risks
- All waste is to be placed in the labeled container immediately after use
- You are reminded of the need of good laboratory practice in order to maintain a safe working environment.

Hazards

◆ Procedure

Practical Hair Analysis

1. One item of clothing is selected per student.
2. The garment is examined as per the standard method for trace evidence. Any hair evidence is removed using tweezers or tape.
3. The hair is then to be mounted onto a microscope slide and examined under low and high power.
4. Notes are made of all characteristics such as length, colour, scale pattern, thickness and any other identifying marks and a sketch is to be made of the hair evidence.
5. Seven reference slides are available and each is to be carefully examined in order to match the evidence sample with one of the reference samples.
6. If a match is made, check with your lecturer to confirm the analysis.

◆ Results

Sample description:-----

Description of hair after microscopic analysis (shape and colour)

◆ Conclusions

Can you confirm a match? Y N