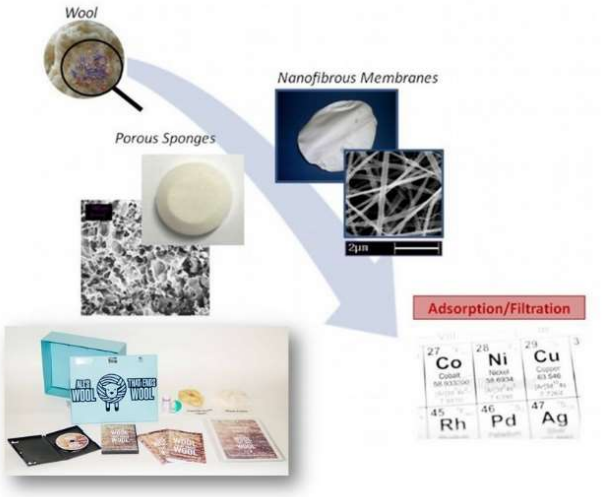
Summary

Renewable keratin wastes for use in metal mining



Target age
Age 16 and over

Level of difficulty ☐ Medium

Key words:

- Wool
- Keratin
- Circular economy

Abstract of the activity:

The toolkit consists of five modules associated with laboratory experiences regarding the extraction, flocculation and identification of keratin and its ability to absorb heavy metals.
Each experience is associated with a video that describes it and a with student's card.
A dossier contains information regarding the history, characteristics and use of wool.

Learning Goals

- Understanding how a waste can be transformed in a new material
- To Describe the structure of the wool fibers
- To Know the characteristics of proteins and in particular those of keratin
- To Know the keratin extraction techniques
- To Identify the presence of a protein in a solution
- List and describe the main techniques for recycling wool

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Summary

Specific Abilities - *At the end of the activity the student will be able to:*

- Conduct experimental and observational studies and analyse data resulting from them
- Work and collaborate with other team members
- Save natural resources and raw materials
- Understand the need for sustainable development to safeguard the earth and its inhabitants

Cross-curricula Links

- Chemistry: condensation reaction, analytical techniques
- Biology: proteins, wool fiber structure
- Economy/Business: use of wool and keratin in various economic sectors and example of circular economy
- Environmental awareness
- History: use of wool in western culture from prehistory to the present day

Prerequisites

- Basic knowledge in general chemistry

Time requirement

☐ 5 h (for laboratory activities)

☐ 14 min (for watching videos, not strictly necessary)

☐ not quantifiable (for any presentations of the various groups)

Materials

- All necessary materials are listed in the modules describing laboratory experiences

Instruments

- Simple basic instrumentation, present in any chemistry laboratory, is required

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Summary

Learning and Teaching Support Materials - What you can find in the toolkit

1. Lab procedures – Module 1-5

Module 1 – Keratin extraction from wool
Module 2 – Wool keratin flocculation and precipitation
Module 3 – Keratin identification
Module 4 – Wool absorption of heavy metals
Module 5 – Keratin container for plants

2. Student's Cards (1-5)
3. Tutorial Videos (1-5)

Video 1 – Keratin extraction from wool
Video 2 – Wool keratin flocculation and precipitation
Video 3 – Keratin identification
Video 4 – Wool absorption of heavy metals
Video 5 – Keratin container for plants

4. Evaluation material 1-5

Appendix 1 – All's wool that ends wool
Appendix 2 – Crossword
Appendix 3 – Crossword key
Appendix 4 – Student's test
Appendix 5 – Student's test solution

RM Ambassadors

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