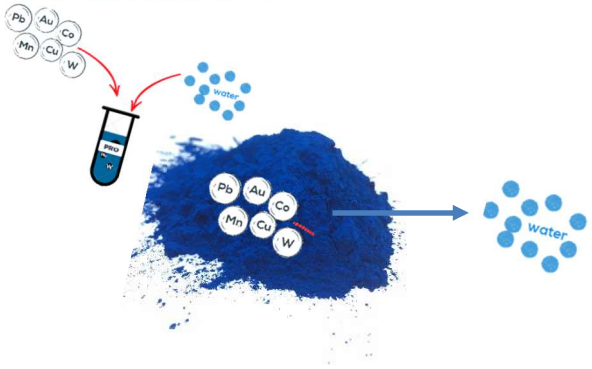
Summary

LET'S MAKE RECYCLING BLUE

A versatile system for a sustainable recovery of Critical Raw Materials from water



Target age

Age 11 and over
(According to the age of students and typology of school and laboratory equipment it is possible to adapt this activity)

Level of difficulty

☐ Easy X Medium ☐ High

Key words:

Sustainability, Recovery, Metal coordination, Critical Raw Materials (CRMs), Adsorption

Abstract of the activity:

This activity suggests to use the Prussian Blue, also known as iron hexacyanoferrate, to absorb CRM ions from water. This pigment can in fact interact with metals such as Copper, Manganese and others.
Prussian Blue is one of the first synthetic pigments ever created.
Thanks to its particular structure it can interact with CRM ions in order to capture them. Actually, it is also used in the pharmaceutical sector to soak up dangerous substances such as Cesium and Thallium in infected hosts.

It can be synthesized in a laboratory or it can be purchased, therefore the synthesis is suggested to student over 16, while for younger students we only proceed with the recovery of metals from the water.

Learning Goals

- To be introduced to the concept of CRMs recovery
- To understand how chemistry can help us to find new solutions to real world problems

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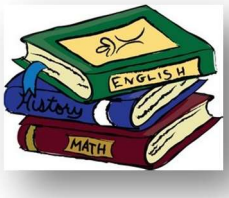
Summary

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

- Know what a coordination compound is and know how to apply its properties to practical cases
- Choose a synthesis process according to the parameters
- Apply the method and verify its efficiency with different metal ion solutions



Cross-curricula Links

- Ecology/Environment
- Chemistry
- Computer Science

Prerequisites - *Knowledge and skills necessary for carrying out the activity*

- Basic inorganic chemical principles
- Stoichiometric principles
- Laboratory techniques (preparing solutions and filtration)

Time requirement *plus eventually other boundary conditions (i.e. Instruments)*

☐ 3 h ☐ 30 min

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

1. Lab Procedure/s- Modules 1-2
2. Students' Cards (1-2)
3. Tutorial Video
4. ppt presentation for preparing a lesson (plus a short text)
5. Questionnaire
6. Evaluation grids

RM Ambassadors

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