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Development and characterisation of clay nanoparticles for use in removing Cr(VI) from water.

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Background :

☒ Kaolinite is a lamellar clay with interesting properties due to its layered structure.

☒ Nano clays have more interesting properties than raw natural clays due to their large because of their large specific surface areas. These nano clays are intended for use in purification of wastewater contaminated by heavy metals.

☒ The tanning industry uses large quantities of chromium, and the wastewater it discharges is a source of pollution for the environment.

is a source of environmental pollution by chromium in all its forms.

Problematic :

The main objective of this project is to develop nano kaolinites from a natural clay rich in kaolinite and then use it to remove chromium (VI) from wastewater. Chromium (VI) is one of the most dangerous pollutants present in wastewater, generally originating from tanneries. Kaolinite, as a nano-structured material with a low surface charge, can offer advantages in the retention of anionic chromium (VI).

The research work will focus mainly on:

☒ Methods for producing nano kaolinites from a kaolinite-rich clay;

☒ Characterisation of the product obtained to ensure the clay's sheet structure: morphology morphology, mineralogical composition and other properties will be assessed using the following following characterisation techniques:

☒ XRD ;

☒ IR;

☒ SEM-EDX ;

☒ BET ;

☒ ICP.

☒ Evaluation of the effectiveness of nano kaolinites in the removal of chromium (VI) from wastewater.

To do this, certain parameters such as pH, contact time, dose of nano kaolinite

Expected results:

As a result of this work, we expect to obtain nano kaolinites with a sheet structure and a very large specific surface area that are highly effective in removing chromium (VI) from wastewater.

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