DEVELOPMENT OF NANOSTRUCTURED AU-AG COMPOSITE BASED ON BOVINE BONE AS A CATALYST: SYNTHESIS, CHARACTERIZATION AND APPLICATION

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Actually the pollution present in bodies of water for potable use has been increasing due to the growth of industries and population. [1]. Due to this, it is sought to develop treatment methods that allow to reuse waste materials and apply the principles of green chemistry.[2]–[5]

The purpose of the composite material was to catalyze and remove contaminants in an aqueous medium. [4], [6]. Through the use of metals that are commonly used in the degradation of some pollutants or that have demonstrated some catalytic properties.[4], [6], [7].

Therefore, Ag-Au nano-structured composite materials based on bovine bone was development , which were obtained by reducing the precursor salts with the aqueous extract of 
Camellia sinesis, in situ in the matrix.[2], [3], [8]

Lastly it was characterized with scanning electron microscopy with Energy-dispersive X-ray spectroscopy detector coupled (SEM-EDS) and X-ray photoelectron spectroscopy (XPS) to confirm the presence of metals in the surface of the material and its distribution; and in turn in transmission electron microscopy with bright field and annular dark field detectors coupled (TEM-BF / ADF) to determine the distribution within the matrix, as well as its shape and size; At the end infrared spectroscopy (IR) analyzes were performed to confirm that the support material was not degraded during the synthesis. After that, tests were carried out to observe the catalytic activity of the composition in the degradation of paranitrophenol to p-aminophenol. Such catalysis was confirmed with the use of ultraviolet spectroscopy (UV). Finally, studies were carried out to observe the effect of the catalysis on the composition.

Keywords: Composite, Catalyze, Green chemistry

Acknowledgment:

This work was supported by CONACYT (Grant No. 280518)

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