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Synthesis and characterization of carbon-sepiolite composite obtained by Pechini Method

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Abstract – Activated carbon and carbon-clay composite was prepared by Pechini method [1].The samples were characterized by X-rays diffraction (XRD), thermal analysis (TGA), Infrared spectroscopy (FTIR). The presence of amorphous phase could be observed by the XRD results, which can be related to carbon. Scanning eletronic microscopy results with EDS showed the presence of carbon in the carbon-sepiolite composite. Studies are in progress to confirm the order degree of the carbon by Raman spectroscopy.

Many economic activities generate a large volume of residues, such as those from agriculture. In this context coconut shell is a very common residue in tropical countries. Coconut shell is processed leaving a considerable fraction of dust, which is known as coir dust. Although the estimated costs of these materials are U.S. $0.80/10 kg, the coir remains available as a waste product for which no important industrial uses have been developed and is normally disposed of or incinerated. An alternative route for the exploitation of agricultural wastes relies on preparation of activated carbon (AC) or composite materials [1,2]. The coconut coir dust was dried in an oven for 12 h at 100 ˚C and sifted through a 100-mesh sieve and activated or mixed to sepiolite. Activated carbon and carbon-clay composite was prepared by Pechini method [3].The samples were characterized by X-rays diffraction (XRD), thermal analysis (TGA), Infrared spectroscopy (FTIR). The presence of amorphous phase could be observed by the XRD results, which can be related to carbon, Figure 1(A). Scanning eletronic microscopy results with EDS showed the presence of carbon in the activated carbon and carbon-sepiolite composite, figure 1(B). Further studies are in progress to confirm the order degree of the carbon by Raman spectroscopy.

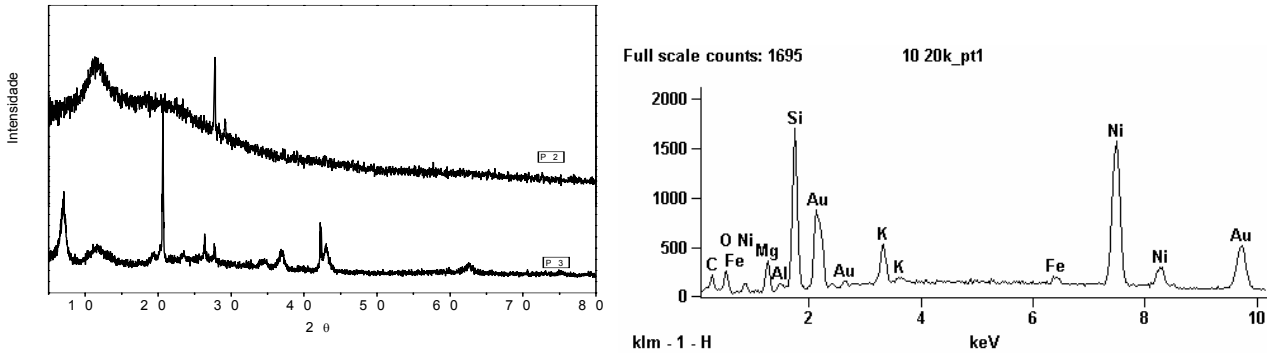

Figure1: (A) **(B) Composition of carbon-sepiolite**

P2 coconut dust/Pechini method;
P3 coconut dust-sepiolite/Pechini method.

References

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