KOFFEECO

A residue treating the environment

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Introduction

All over the world, millions of people consume coffee beverages every day. This leads to the massive production of coffee grounds waste which are commonly discarded. Therefore, further investigation ought to be taken in order to reuse this waste and transform it in an environmental remediation agent.

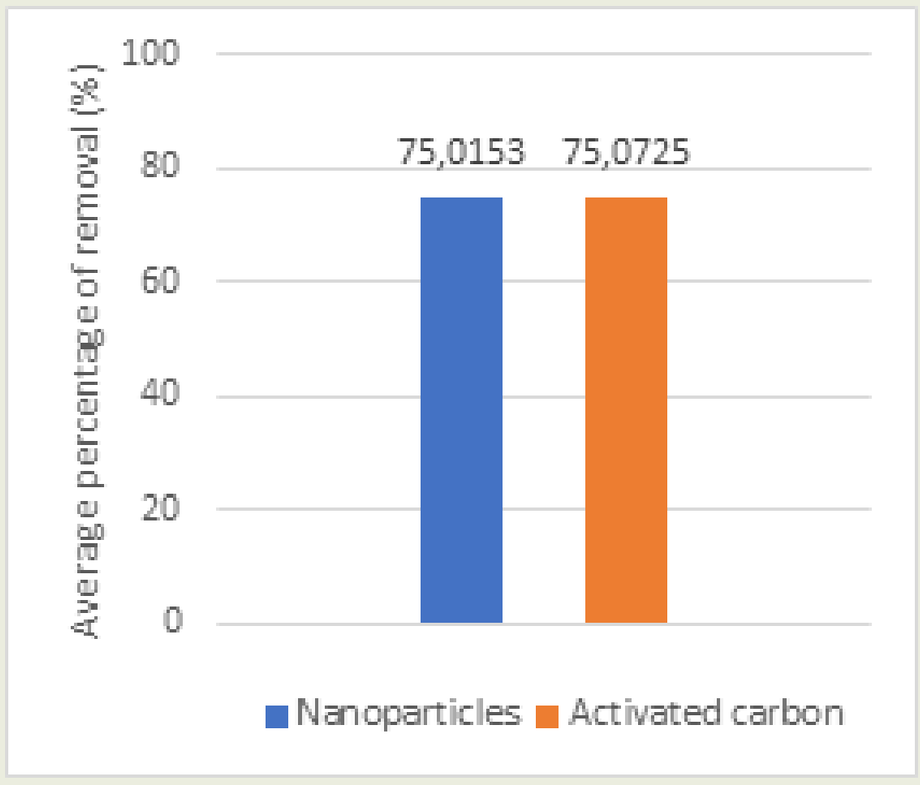
Objectives

- Produce green zero valent iron particles (gnZVI) from coffe grounds
- Produce activated carbon from coffee grounds waste
- Evaluate the medicine's removal from water using activated carbon and gnZVI
- Analyse the efficiency of these two approaches

Methodology

To produce the activated carbon, we used a pyrolitic reactor, where the coffee grounds waste was subjected to elevated temperatures, in an inert atmosphere. To produce the nanoparticles, we combined a natural antioxidant extract with an iron (III) solution that transformed the Fe3+ into Fe0. In our experiments we used a spectrophotometer to read the samples absorbances, and evaluate the removal of Carbamazepina (the medicine) from water.

Results



Conclusion

We concluded that both activated carbon and nanoparticles are promissing solutions regarding environmental remediation, namely, in terms of the removal of Carbamazepine from water. Despite the fact that the contamination of water with this medicine occurs, mainly, in hospital environments, it is importatn to adress this issue.

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