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FACULDADE DE CIÊNCIAS E TECNOLOGIA
UNIVERSIDADE NOVA DE LISBOA

Department of Sciences and Technology of Biomass

PhD thesis in Energy and Bioenergy

Study of the valorisation of the solid by-products obtained in the co-pyrolysis of different wastes

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LNEG

Maria Bernardo

PhD Student

Graduation in Chemical Engineering.
Master in Energy and Bioenergy.
Main field of research: pyrolysis, chars, chemical and ecotoxicological characterization, adsorbents.
Author of several papers in the areas previous mentioned.

Objectives

Study of the pyrolysis of different feedstock mixtures such as plastic wastes, forestry biomass and used tires focused on the solid by-product obtained in the process, commonly known as char. Physical and chemical characterization of these chars and application of treatments to improve their properties in order to valorize these by-products as adsorbents.

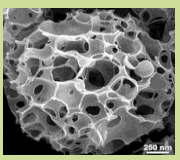
Methodology

Pyrolysis experiments carried out in stirred batch reactors in N_2 atmosphere;

Characterization of pyrolysis chars:
- Determination of several inorganic and organic parameters
- Leaching and ecotoxicological tests
- Textural and adsorption properties

Improvement of chars properties
- Acid washing, EDTA washing; organic solvent extractions

Adsorption tests: Efficiency as adsorbents for heavy metals and organic compounds



Expected Results

The results of this research will give an in-depth knowledge about the composition, risk assessment and properties of these carbonaceous materials, which will allow to define the necessity of a previous upgrading treatment to improve chars quality so they can be applied efficiently and safely to environmental matrices as adsorbents.

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