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Colexio Oficial de Químicos de Galicia

SOCIEDADE PORTUGUESA DE QUÍMICA

XXVI ENCONTRO GALEGO PORTUGUÉS DE QUÍMICA

CONGRESO INTERNACIONAL

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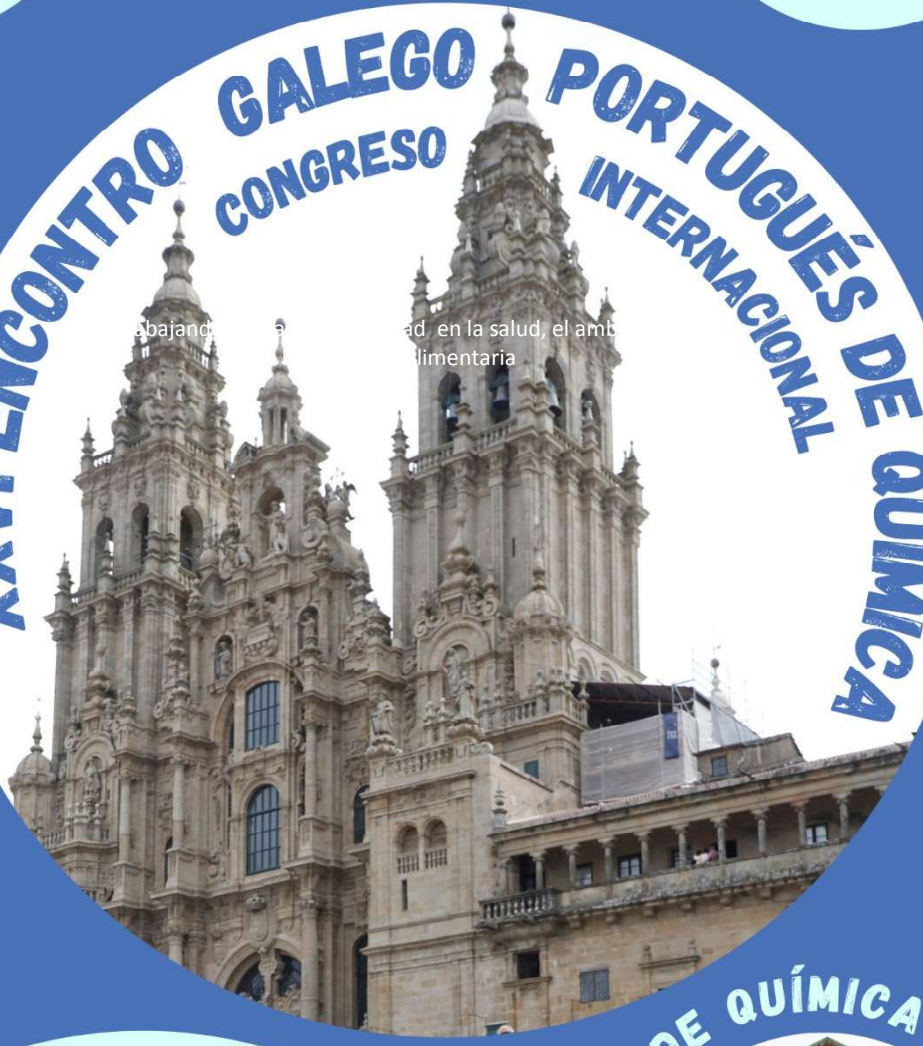

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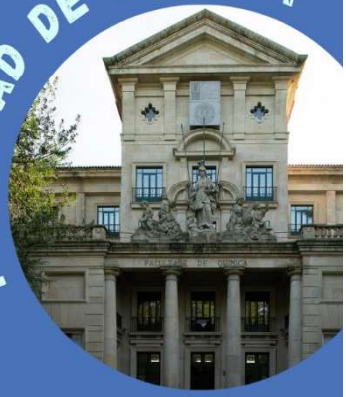

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PROGRAMA DEL XXVI ENCONTRO INTERNACIONAL GALEGO PORTUGUÉS DE QUÍMICA

SALAS		Planta
A	Aula Magna	P. Baja
B	Química Física	
C	Química Técnica	
D	Química General	2ª

DÍA	HORA	SALAS				
		PLENARIAS / SALA A	A	B	C	D
16	10:00 - 12:00	INSCRIPIÓN Y RECEPCIÓN				
	12:00- 12:30	SESIÓN DE APERTURA. Aula Magna				
	12:30-13:30	CONFERENCIA PLENARIA de APERTURA. Aula Magna				
	13:30-15:00	COMIDA				
	15:00		QS01	AMB01	ALM01	CAT01
	15:15		QS02	AMB02	ALM02	CAT02
	15:30		QS15	AMB03	ALM03	CAT03
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	16:05		QS05	AMB05	ALM05	CAT05
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	16:50		QS08	AMB08	ALM08	CAT08
	17:05-18:00	COFFEE BREAK + POSTERS				
	18:00-19:00	CP1				
	19:00		QS09	AMB09	ALM09	CAT09
	19:15		QS10	AMB10	ALM10	CAT10
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	20:00		QS13	AMB13	ALM13	CAT13
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AMB09 Controlled thermal degradation of Polyoxometalate@Zeolitic Imidazolate Framework composites towards novel oxidation catalysts.

AMB10 Biomass-based materials for estrogens adsorption from water: production methods and their characterization.

AMB11 Green Chemistry in the Pharmaceutical Industry.

AMB12 Predicting DDT past and future contamination from a local source with a new gridded dynamic multimedia fate model.

AMB13 Evaluation of activated carbon obtained from olive stones for the removal of sertraline from waters.

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AMB15 Geoquímica e biodisponibilidade do Cu em solos de manguezais da Baía de Todos os Santos, Bahia, Brasil.

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AMB17 Development of a Sustainable Recovery Process of Indium from Liquid Crystal Displays of Smartphones Waste.

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AMB19 Pre-treatment to increase gold recovery from integrated circuits of smartphones wastes.

AMB20 Valorization of vine shoots to extract lignin – chemical and structural characterization.

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AMB28 Low-cost natural biosorbents for the treatment of contaminated waters.

Biomass-based materials for estrogens adsorption from water: production methods and their characterization

Eduardo C. Milani[1,2,3,*], Maraísa L. Menezes[3], Jose L. Díaz de Tuesta[1,2,4], António E. Ribeiro[1,2], Paulo Brito[1,2], Ana Queiroz[1,2]

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Activated carbons (ACs) are low-cost carbonaceous materials with a high surface area ranging from 500 to 3000 m^2/g. ACs are produced by pyrolysis that consists of the combustion of organic matter above 500 °C in the absence of oxygen, to have the breaking of carbonic bonds and formation of porosity in the material. ACs are also undergo an activation process in order to increase its adsorption performance. Activation can be performed only by physical treatment, in which the organic material is thermal treated with an atmosphere of air, CO_2, and water vapor, or also by applying some chemical treatments using generally, strong acids, chloride salts or strong bases [1, 2]. As carbon source for ACs preparation, many precursors have been tested, mainly biomass wastes (olive stones, rice husk, coconut shell, among others) [2]. According to the Instituto Nacional de Estatística (INE), in 2021 Portugal produced more than 1.3 million tons of olives and it is estimated that more than 500,000 tons of residues were generated per year [3]. This work aims to investigate different production methods of ACs from olive stones change and their effects on the characteristics of the resultant adsorbents.

From the olive stone, five different materials were produced, namely (i) powdered olive stone, (ii) pyrolyzed at 800°C for 1h, with a heating rate of 10°C/min with N_2 flow of 20 cm^3/min, (iii) carbonized at 500°C for 1.5h with a heating rate of 10°C/min in a sealed crucible, (iv) chemical activated using acid phosphoric acid and (v) chemical activated with sodium hydroxide. The carbonization yield was determined, as well as the main physicochemical properties of ACs, such as the particle size frequency distribution of powdered raw-material, FTIR analysis and pH at point of zero charge.

The olive stone, after milling, had a predominant diameter of 188 μm, representing an average Sauter diameter of 162.4 μm. The moisture was 12.13% ± 0.08 and the ash content was 1.09% ±0.08. The carbon production method significantly influences the carbonization yield, acid activation was the method that allowed the highest yield (57.45%). The adsorbent's production method also has a significant impact on the adsorbents' pH_{PZC}, which is shown by the fact that the acid activation provides the material with the lowest pH_{PZC} (3.84).

The olive stone raw-material shows an important potential to be used on the production of activated carbons with high carbonization yields. Surface area, pore size, thermogravimetric analysis, and adsorption performance assays are under study.

Acknowledgments
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