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Activated nanocarbons produced by microwave-assisted hydrothermal carbonization of Amazonian fruit waste for methane storage

Orlando F. Cruz, Joaquín Silvestre-Albero, Mirian E. Casco, Dachamir Hotza, Carlos R. Rambo

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2	hydrothermal carbonization of Amazonian fruit waste for methane
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4	Orlando F. Cruz Jr. ^{1,2} , Joaquín Silvestre-Albero ² , Mirian E. Casco ² , Dachamir Hotza ³ ,
5	Carlos R. Rambo ^{4*}
6	
7	¹ Instituto Nacional de Pesquisas da Amazônia (INPA)
8	69011-970 Manaus, AM, Brazil
9	² Departamento de Química Inorgánica
10	Universidad de Alicante
11	E-03080 Alicante, Spain
12	³ Department of Chemical and Food Engineering (EQA)
13	⁴ Department of Electrical and Electronic Engineering (EEL)
14	Federal University of Santa Catarina (UFSC)
15	88040-900 Florianópolis, SC, Brazil
16	
17	Abstract
18	This work reports the preparation and characterization of biomass-derived renewable
19	microporous carbon nanoparticles obtained by microwave-assisted hydrothermal
20	carbonization (MAHC), following by physical activation, of assai stone waste.
21	Conventional routes (i.e. carbonization in furnace and chemical activation) was also
22	investigated. The highest yield provided by MAHC combined with CO ₂ as activating
23	agent resulted in nanocarbons with surface area of 1100 m^2/g and a very narrow pore size
24	distribution with a micropore volume of 0.45 cm ³ /g. Owing to the excellent combination
25	of microporosity and high bulk density (0.89 g/cm ³). The biomass-derived carbon shows
26	great potential to be used as adsorbent for natural gas storage. Indeed, high pressure
27	methane adsorption isotherm in volumetric basis revealed an uptake value of 140
28	V(STP)/V at 25 °C and 4 MPa.
29	

Keywords: Carbon nanoparticles; biomass, hydrothermal microwave carbonization,
methane storage.

32 ***Corresponding author**: <u>carlos.rambo@ufsc.br</u>

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