Nanoscopic hydrogen reservoir orange peel biowaste

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This work addresses the bio-waste valorization approach for the development of a novel carbonaceous nanomaterial to be used in the adsorption of hydrogen as an alternative in the use of green hydrogen. In this research, activated carbons were synthesized orange peel using different synthesis conditions. With the activated carbons obtained with the best structure and texture, the adsorption of hydrogen and the effects on their meso / microporosity were studied. The activation of the carbon was carried out by means of a chemical process with phosphoric acid as activating agent, varying the acid concentration, the substrate / activating agent ratio, and the contact time between them.

The best support was obtained using a carbonization time of 1 h, a carbonization temperature of 470^{o}C, a phosphoric acid concentration of 50% by weight and a BET area of ??1402 m^2 / g. Said material significantly improved H_2 storage behaviour compared to CMK-3 type nanostructured carbon (3.1% by weight at -196,15 ^{o}C and 10 bar). The synthesized material shows promise in absorbing hydrogen by weak binding forces (physisorption).

Keywords: Orange peel, revaluation of biowaste, hydrogen adsorption

Acknowledgment:

JMJ, BCL, OAA, MGC, ARB, investigadores del CONICET, UTN-FRC. Los autores agradecen a FONCyT. PICT 2017-2021 1740 y PICT 2016-1135.

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Sociedad Mexicana de Materiales A.C.

Mexico City, March 22nd, 2022

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I am pleased to inform you that your contribution **"Nanoscopic hydrogen reservoir orange peel biowaste"** by *Juliana Maria Juarez, Brenda C Ledesma, Oscar A Anunziata, Marcos B Gomez Costa, Andrea Raquel Beltramone,* has been **accepted** in symposium **B5, Challenges In Materials and Technologies for Energy Conversion, Saving and Storage (MATECSS)** at the XXX International Materials Research Congress, to be held in Cancun in August 14 - 19, 2022.

The presentation has been accepted in the **Poster** modality. Remember that in order to include your abstract in the congress program you must confirm your participation no later than May 22th by choosing the modality you will present your abstract(s); you can do this from your IMRC account.

Organizers of the Symposium
"Challenges In Materials and Technologies for Energy Conversion, Saving and Storage (MATECSS) "

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