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Biokerosene and green diesel from macauba oils via catalytic deoxygenation over Pd/CVanya Marcia Duarte Pasa, Larissa Noemi Silva, Isabel C P Fortes and Fabiana P de Sousa
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Macauba is a palm tree with good oil productivity (6.2 ton/ha), is native to Central and South America and is not exploited for food purposes. Its oils have been noted as an important alternative for the production of biofuels, especially for aviation. This study investigated deoxygenation catalyzed by 5% w/w of palladium on charcoal (Pd/C) reduced *in situ* using crude and previously hydrolyzed macauba pulp and almond oils with different compositions and acidity values. The effect of the fatty composition and nature of the feedstock, reaction pressure, atmosphere, presence of stirring and use of the Pd/C catalyst were studied. The results indicated high selectivity with a predominance of saturated linear hydrocarbons that correspond to green diesel, followed by biojet fuel hydrocarbons. Oxygen removal was favored for free fatty acids with long carbon chains, for which decarbonylation and/or decarboxylation predominates. The highest content of hydrocarbons (85% w/w) was obtained in the reaction of hydrolyzed macauba almond oil at 10 bar of H₂, 300°C, 5 hours of reaction and stirring at 700 rpm. This green product has potential applications as a drop-in substitute for fossil fuels.

Biography

Vanya Marcia Duarte Pasa is a Chemical Engineer and Doctor in Chemistry (1996) from Universidade Federal de Minas Gerais (UFMG). She has worked for ACESITA for 9 years and has worked for UFMG for 20 years. As an Associate Professor, she has developed processes for bio-oil valorization (carbon fibers, biocoatings, bioresins & nanostructures) and biofuel production (biodiesel, green diesel and biokerosene). She is the Coordinator of UFMG's Fuel Laboratory and has large experience in fuel quality control and fuel certification, working in partnership with ACESITA, Petrobrás, ANP, Boeing, Rima S/A, Granbio, UNESCO, GTZ-German Agency. She has several patents and dozens of published papers.

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