

Universidad de La Laguna

Title: 3D Printing to biodiesel production by photocatalysis

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This work is focused on biodiesel production from low cost renewable freedstock, for example waste and edible oil. For that purpose, a heterogeneous catalysis will be made by potassium loaded on an amorphous aluminum silicate naturally occurring as volcanic material (pumice).
The main challenge for the production of biodiesel from low quality oils is the high percentage of free fatty acids (FFA). In addition, the presence of water in the freedstock material causes undesiderable reactions, which hinders the reaction evolution. Catalytic materials were tested in the transesterification reaction, when the freedstock material presented the conditions before mentioned that difficulted the reaction.

However, the objective of this work is not just focused on biodiesel production. The novelty of it is obtaining catalytic material by 3D printing in order to design a catalytic stirring system with high mechanical strength, efficient and reusable. The use of 3D printing in biofuel production is a novelty that brings good solutions for catalyst production. In this way, the design and the mechanical resistence, will be parameters which improve the performance.

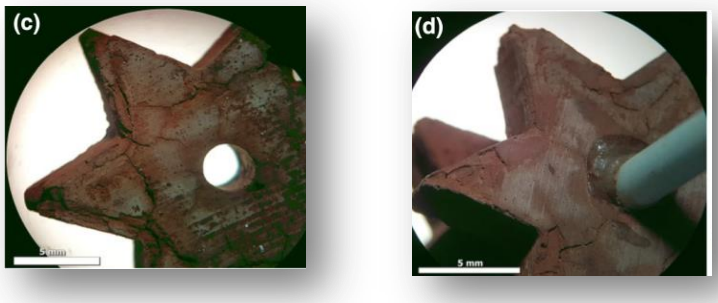


Figure 1, Pumice support with star shape

Biography

Lorena Hernández Afonso is carrying out her PhD in the Inorganic Chemistry Department at the University of La Laguna. Her research is focused on 3D printing materials for Energy and environmental applications. She works in a research group, which has two project in process, one of them is national and another european about 3D printed advanced materials with energetic applications. As a result of her research work, she has co-authored five peer-reviewed articles.

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