

LA PALMA VOLCANO ASHES AS SUITABLE GREEN CATALYST

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On September 19, 2021, the eruption of the "Cumbre Vieja" volcano started in La Palma, Canary Islands. During at least 86 days, the volcano ejected more than 159 million cubic meters of magmatic material and ashes, significantly changing the island surface and people's lives. Volcanic materials can be used for construction purposes or even as a fertiliser. However, other uses are related to a green and circular economy, in line with the current European Union energy directives.

According to previous studies by the authors, volcanic ashes have been used as a suitable material for catalysis and catalyst synthesis, including hydrotreating, photocatalysis, and even wastewater pollutant degradation. Indeed, depending on the volcanic material composition, acid treatment can significantly increase its porosity, which opens many possibilities to synthesise green catalysts.

This study reports the characterisation of the volcanic ashes from La Palma volcano (including XRD, XRF, Hg porosimetry, SBET, FT-IR and Raman spectra) and their suitability as a green catalyst. Our preliminary results show high amounts of Si, Fe, Al, Ca, together with low porosity. This high alkaline metal content points to the acid treatment as a promising way to increase material porosity, like with phonolite-type materials. The XRD pattern shows an amorphous material with characteristic peaks related to Augite and Albite crystal forms. The analysis of Raman Spectra allows the evaluation of the material as a potential photocatalyst.

References:

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