

## Reaction Rate of Olive Stone during Combustion in a Bubbling Fluidized Bed

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**Abstract :** Combustion of biomass is a promising alternative to reduce the high pollutant emission levels associated to the combustion of fossil flues due to the net null emission of CO<sub>2</sub> attributed to biomass. However, the biomass selected should also have low contents of nitrogen and sulfur to limit the NO<sub>x</sub> and SO<sub>x</sub> emissions derived from its combustion. In this sense, olive stone is an excellent fuel to power combustion reactors with reduced levels of pollutant emissions. In this work, the combustion of olive stone particles is analyzed experimentally in a thermogravimetric analyzer (TGA) and in a bubbling fluidized bed reactor (BFB). The bubbling fluidized bed reactor was installed over a scale, conforming a macro-TGA. In both equipment, the evolution of the mass of the samples was registered as the combustion process progressed. The results show a much faster combustion process in the bubbling fluidized bed reactor compared to the thermogravimetric analyzer measurements, due to the higher heat transfer coefficient and the abrasion of the fuel particles by the bed material in the BFB reactor.

**Keywords :** olive stone, combustion, reaction rate, fluidized bed

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