**Thermochemical Behavior and Gas Emission analyses of Olive pomace**

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**Abstract.** Olive oil sector is an important food industry in Mediterranean countries hence large quantities of waste residue are generated as pruning, pomace, pomace oil, and vegetation water, that represents a relevant pollution problem for the industry and oil farms because of their environmental impacts, when not properly treated. For this reason, olive waste disposal is subjected to regulatory limitation, and have additional costs for treatment operations. Therefore, characterizing this residue allows knowing and foreseeing the best strategy to enhance them without causing damage to the environment.

The proposed work concern the behaviour study of olive pomace during the thermal decomposition process coupled to the evaluation of emission profile and volatile products. After characterization, the sample waste was studied by thermogravimetric analysis by TGA/DSC to simulate thermochemical processes, and by GC-MS to investigate the composition of the emissions produced as CO, CO2, N2, H2, CH4, O2 and VOC. The experiments of combustion, gasification, and pyrolysis of olive pomace, were performed under a nitrogen atmosphere at different heating rates.

The results showed that the olive pomace had a low ash content, a high carbon content, low moisture and had a good potential, useful as bio-product for energy conversion to its high volatile matter content and the high heating value. The thermal behavior was successfully mostly for combustion process also for low CO, CO2, and CH4, emissions.

Olive pomace was considered a sustainable and eco-friendly biofuels with good characteristics for conversion in boilers to solve problem of management, impacts on the environment and economy field.