

Master Thesis Brief Description

Thesis Title	Catalytic Pyrolytic Thermochemical Conversion of grape pomace to Biofuels
Programme of Studies	MSc in Sustainable Energy Systems
Course	MES 580 Master Thesis
Area of Study	Sustainable Energy Technologies – Biofuels Assessment
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Supervisory Committee	Dr Chris Christodoulou, Professor, Mechanical Engineering Department Dr. George Karagiorgis, Assoc. Professor, Mechanical Engineering Department
Semester	Fall Semester 2018
Short Description	<p>Thermochemical conversion is the controlled heating and oxidation of biomass as part of several pathways to produce intermediate energy carriers or heat. Biomass thermochemical conversion pathways include torrefaction, hydrothermal carbonisation (HTC), pyrolysis and gasification.</p> <p>The main objective of this work is to examine the exploitation possibilities of grape pomace (residues of winery production) used as biomass feedstock in the fast catalytic pyrolysis process. In-situ catalytic upgrading of biomass fast pyrolysis vapors will be performed in a fixed bed bench-scale reactor, for catalyst screening purposes. The bio-oil will be characterized measuring its water content, the carbon–hydrogen–oxygen (by difference) content and the chemical composition of its organic fraction. The potentials of grape pomace as a potential biofuel for the energy mix of Cyprus should also be assessed by means of a comprehensive supply chain and quantification analysis. For the implementation of this project, mobility opportunities through the Research Project BRISK (Biofuels Research Infrastructure for Sharing Knowledge) will be exploited.</p>