Thesis Title	**Pyrolysis of Plastic Waste into Hydrocarbons**
Programme of Studies	MSc in Sustainable Energy Systems
Course	MES 580 MSc Thesis
Area of Study	Sustainable Energy Technologies – Biofuels
Student's Name	Maria Mela
Students Reg. Number	18682
Supervisor	Dr.-Ing. Paris A. Fokaides, Asst. Professor, Mechanical Engineering Department
Supervisory Committee	Dr Chris Christodoulou, Professor, Mechanical Engineering Department Dr. George Karagiorgis, Professor, Mechanical Engineering Department
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Short Description	This master thesis addresses the pressing issue of non-biodegradable plastic waste, which accumulates in Municipal Solid Waste and littered areas. Traditional recycling methods have limitations, and the dependence on conventional energy sources for processing plastics further exacerbates the environmental impact. The report explores plastic pyrolysis as an alternative method to convert plastic waste into hydrocarbon fuels, with a focus on utilizing solar thermal energy as the primary energy source. The process involves the thermal degradation of materials into long-chain hydrocarbons, which are then further thermally degraded into smaller chain hydrocarbon fuels. While fast pyrolysis with a catalyst is commonly used at temperatures between 500°C and 900°C, this study concentrates on slow solar pyrolysis at a lower temperature of 350°C, harnessing the sun as the main heating energy source. The simulation in this study demonstrates the production of Benzene and Ethane through the pyrolysis of PET, PP, and PS plastics, using solar thermal energy collected by Parabolic Trough Collectors. This research contributes valuable insights into utilizing solar thermal energy for sustainable plastic waste management and hydrocarbon fuel production, promoting a greener and more efficient approach to plastic waste treatment.