Introduction: Oil, natural gas and coal form the main constituent of fossil fuel energy. These energy resources were formed millions of years ago as the consequence of decomposition of organic remains trapped in the sediments and subjected to high temperature and pressure conditions in the subsurface of the earth. The consumer demand for crude oil is increasing with annual rate in excess of 2%. This demand is even higher in the advanced Asian countries like China, India and South Korea owing to increase in transportation, using cars and trucks powered by internal combustion engines.

The tire pyrolysis oil and plastic pyrolysis oil have been investigated and found that they both are able to run in diesel engine and the fuel properties of the oils are comparable to diesel oil. Both pyrolysis oils are a complex mixture of emission characteristics have made it popular in small automobile engines for passenger cars and light trucks.

Objectives
- To extract Tyre pyrolysis oil (TPO) from waste automobile tyres through pyrolysis process.
- To determine the brake thermal efficiency, brake specific fuel consumption of the engine fuelled by TPO-DIESEL blends.
- To study the emission characteristics like NOX, HC, CO and SMOKE.
- To analyze feasibility of using TPO in diesel engines as an alternative fuel in future.

Methodology
- In this current investigation the oil taken the tyre pyrolysis oil which is obtained from the pyrolysis of the waste automobile tyres.
- In the early stage the test to be performed on the single cylinder diesel engine by using diesel and base line data will be created.
- In the second stage of the experimental investigation will be carried out on the same engine with same operating parameter by using the tyre pyrolysis oil (TPO) blended with diesel.
- In different extent such as 10, 30 and 50% of TPO-diesel blend to find the performance parameter and emissions.
- Finally the experimental investigation will be carried out for a single cylinder diesel engine with TPO-diesel blend.

Flow Chart

Results and Conclusion:
The following are the conclusions are taken from the Experimental results
1. Brake Thermal Efficiency of the engine decrease with increase in TPO blends concentration than diesel fuel. Thermal efficiency for diesel fuel operation at different loads in case of TPO 10% blend it is 22.47%. In case of 20% blend it is 15.83%. In case of 30% blend it is 18.55%
2. The TPO-DF blend shows higher BSFC value than diesel due to lower calorific value of TPO-DF blend. As the load increase BSFC of the TPO-DF decreases.
3. Mechanical Efficiency of the TPO-DF increases with increasing load. For 10% the maximum efficiency obtained is 21.64%, in case of 20% blend it is 53.2%, and in 30% it is 49.7%.
4. The CO emission are higher at higher loads and is increasing with the blend ratio.
5. Similarly for HC emissions at higher loads the HC emission is high.
6. For the CO2 emission at 30%blend the emission level is high in all the load conditions.
Scope for future work: It can be as an alternative fuel for diesel engines. Environmental degradation through waste automobile tyres can be reduced. The TPO oil can be used for industrial purposes because of its high thermal efficiency than diesel fuel.