Synthesis of Biodiesel Based on Waste Cooking Oil

sead : stem

Subjects
Chemistry Biology

Topics
Regenerative Energy Recycling

Key Words
Biodiesel Renewable Energy Fuels Waste Recycling

Lamp Test

Fill three oil lamps with diesel, biodiesel and waste oil and light them.

Fig 2

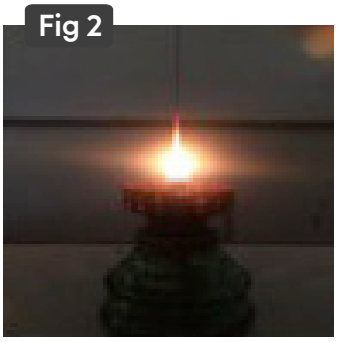

Fig 3

Fig 4

Observations

1st lamp: Diesel

Burning time

Smoke production

Brightness

For Teachers
- Burning lasts long
- Exhausts black smoke
- Strong light

2nd lamp: Biodiesel

Burning time

Smoke production

Brightness

For Teachers
- Burning lasts long
- Exhausts black smoke
- Strong light

3rd lamp: Waste oil

Burning time

Smoke production

Brightness

For Teachers
- Burning lasts long
- Exhausts black smoke
- Strong light

Our synthetic oils are actually organic diesel and can be used because they do not cause harmful pollution.

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Test with Aluminum Foil

Dip a rolled strip of aluminum foil into the three liquids and try to light them. What do you observe?

Fig 5

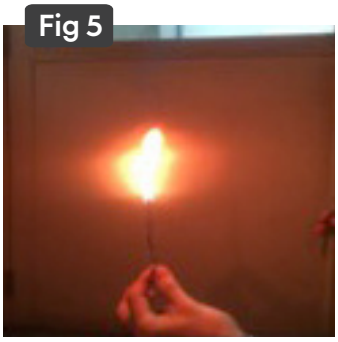


Fig 6

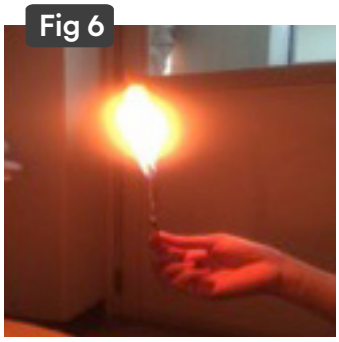
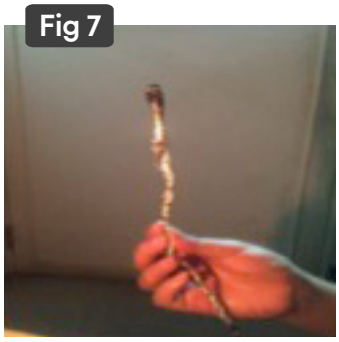


Fig 7



Observations

Diesel

	Yes	No
Burns	○	○
Burns well	○	○
Black smoke	○	○

For Teachers

- Burns well
- Black smoke

Biodiesel

	Yes	No
Burns	○	○
Burns well	○	○
Black smoke	○	○

For Teachers

- Burning well
- No black smoke

Waste oil

	Yes	No
Burns	○	○
Burns well	○	○
Black smoke	○	○

For Teachers

- Not burning

Conclusion

After completing the experiments, we can conclude that waste oil can also be used instead of oil or animal fat to produce biodiesel through transesterification. At the same time, the experiments told us about the potential of recycling waste, such as waste oil, from the environment and contribute to promoting and reducing waste as a part of the environmental protection. On the other hand, the activity gave us useful information about wasted oil and petroleum biodiesel for daily use.