# SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)

COIMBATORE-35

**Accredited by NBA-AICTE and Accredited by NAAC – UGC with A+ Grade**

**Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai**

## DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

## COURSE NAME: 19EEO305 /Renewable Energy Generation Technology

IV YEAR / VII SEMESTER

UNIT 4- BIOMASS AND HYDRO ENERGY

Topic 5 – Bio diesel

# SUCCESSFUL STUDENT

Positive Attitude

Professionally Groomed

Socially Interactive

Technically Skillful

# What is Biodiesel?

- It is a renewable and natural domestic fuel extracted from animal fats or vegetable oils, mostly from
  - Soya bean
  - Rapeseed
  - Jatropha
  - Palm oil

- Biodiesel is a general name given for methyl esters obtained from organic feedstock.

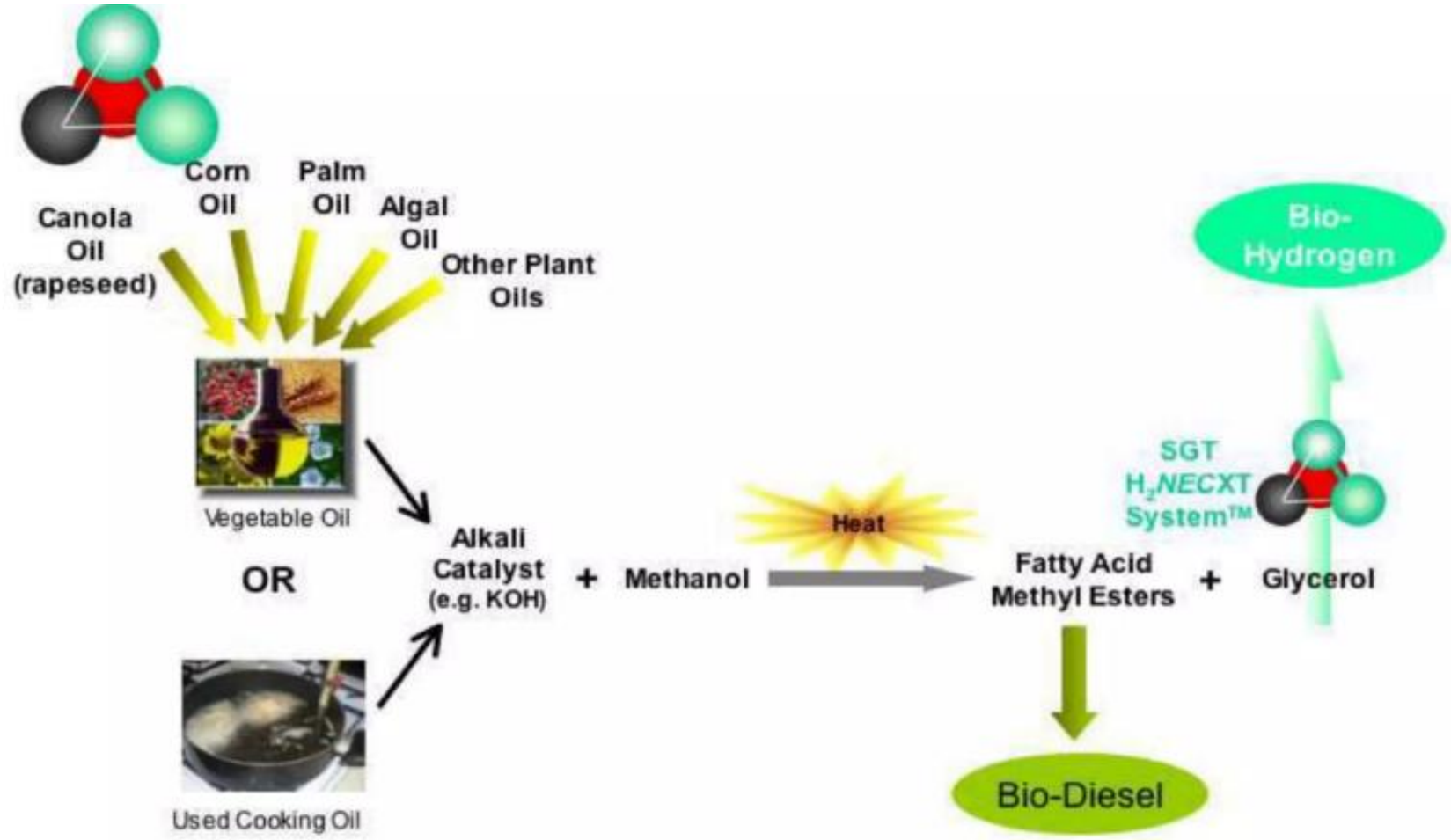
# Environmental and Socio Economic Benifits

- It is biodegradable, renewable and nontoxic in nature.
- Extremely low emission of greenhouse gases as compared to fossil fuels.
- Increase in trade balance (Indian perspective) due to lesser dependence on foreign resources.
- Promoting environmental protection & energy security in the country.

# Biodiesel Production Process

- Biodiesel is produced from vegetable oils or animal fats and an alcohol, through a transesterification reaction.

- Stages of Transesterification:
  - ✓ Treatment of raw material
  - ✓ Alcohol catalyst mixing
  - ✓ Chemical reaction
  - ✓ Separation of reaction products
  - ✓ Purification of reaction products




# Biodiesel Production Process

# Jatropha - Suited Raw Material

- Plants are able to produce seeds between 1 and 5 years depending on soil fertility and rainfall, and continue to produce seeds for more than 20 years.
- Seed yield under cultivation can range from 1,500 to 2,000 kg per hectare.
- The seeds contain average 34.4% oil by weight that can be processed to produce a high quality biodiesel fuel.

# ASSESSMENT


# REFERENCE

**Reference Book:**

1. S.P. Sukhatme, ‘Solar Energy’, Tata McGraw Hill Publishing Company Ltd., New Delhi, 1997. (UNIT II)

2. G.N. Tiwari, ‘Solar Energy – Fundamentals Design, Modelling and applications’, Narosa Publishing House, New Delhi, 2002. (UNIT II)

3. S.M. Muyeen,” Wind Energy Conversion Systems: Technology and Trends”, Springer 2012. [UNIT III]

**Text Book:**

1. G.D. Rai, ‘Non Conventional Energy Sources’, Khanna Publishers, New Delhi, 2006. (UNIT I - V)

2. D.P.Kothari, K.C.Singal and Rakesh Ranjan,”Renewable energy sources and Emerging Technologies”, PHI Pvt. Ltd., 2009. (UNIT I-V)

# THANK YOU!!