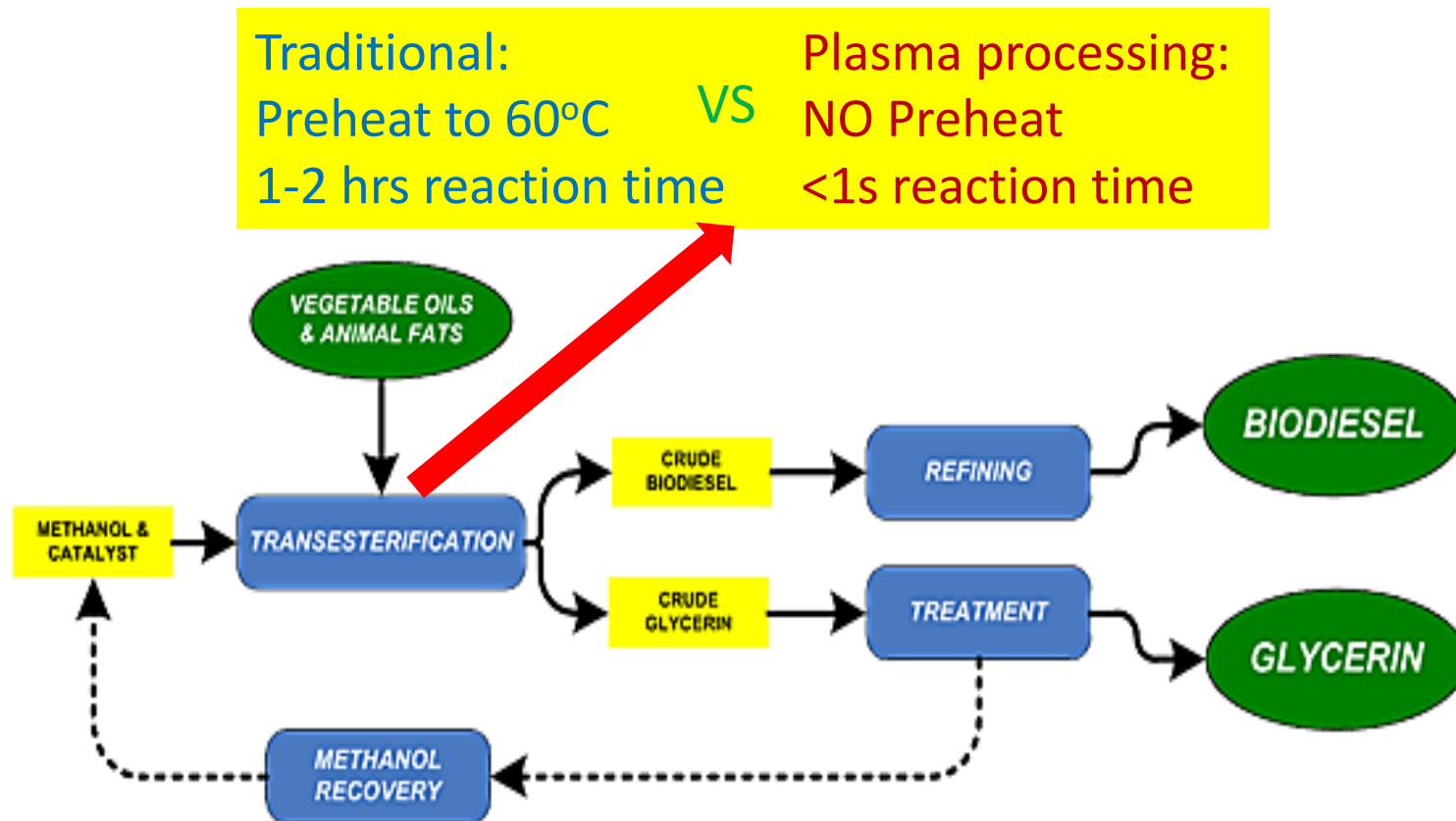
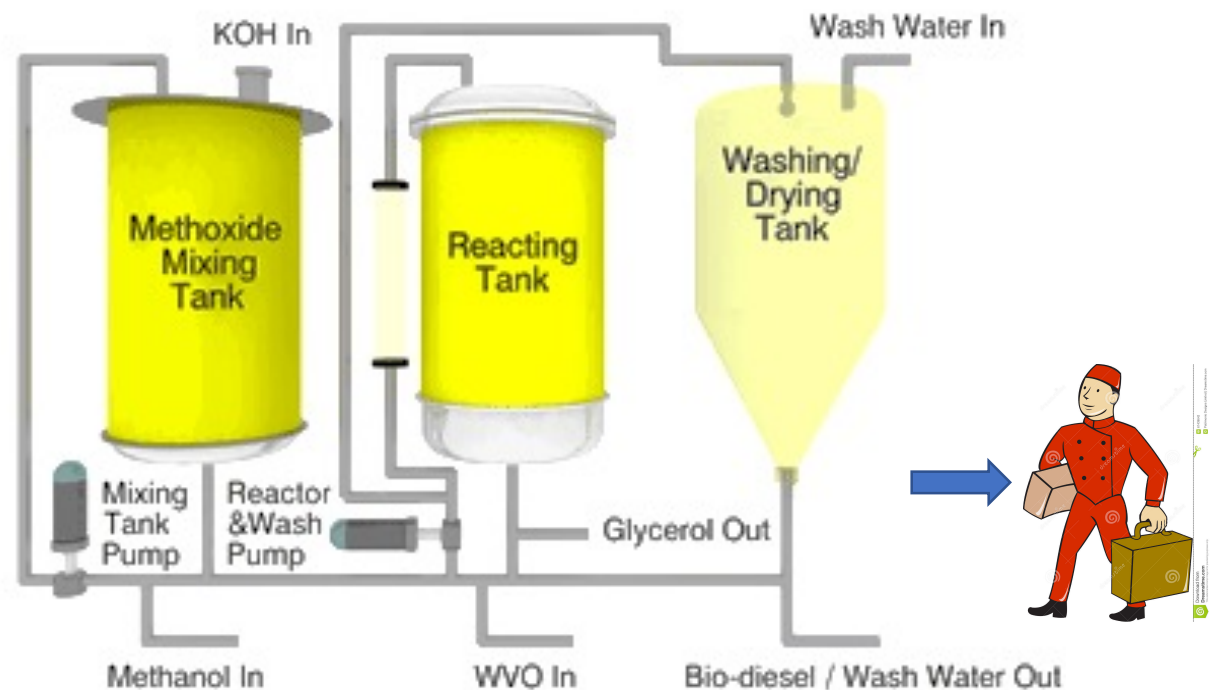


Biodiesel synthesis processes

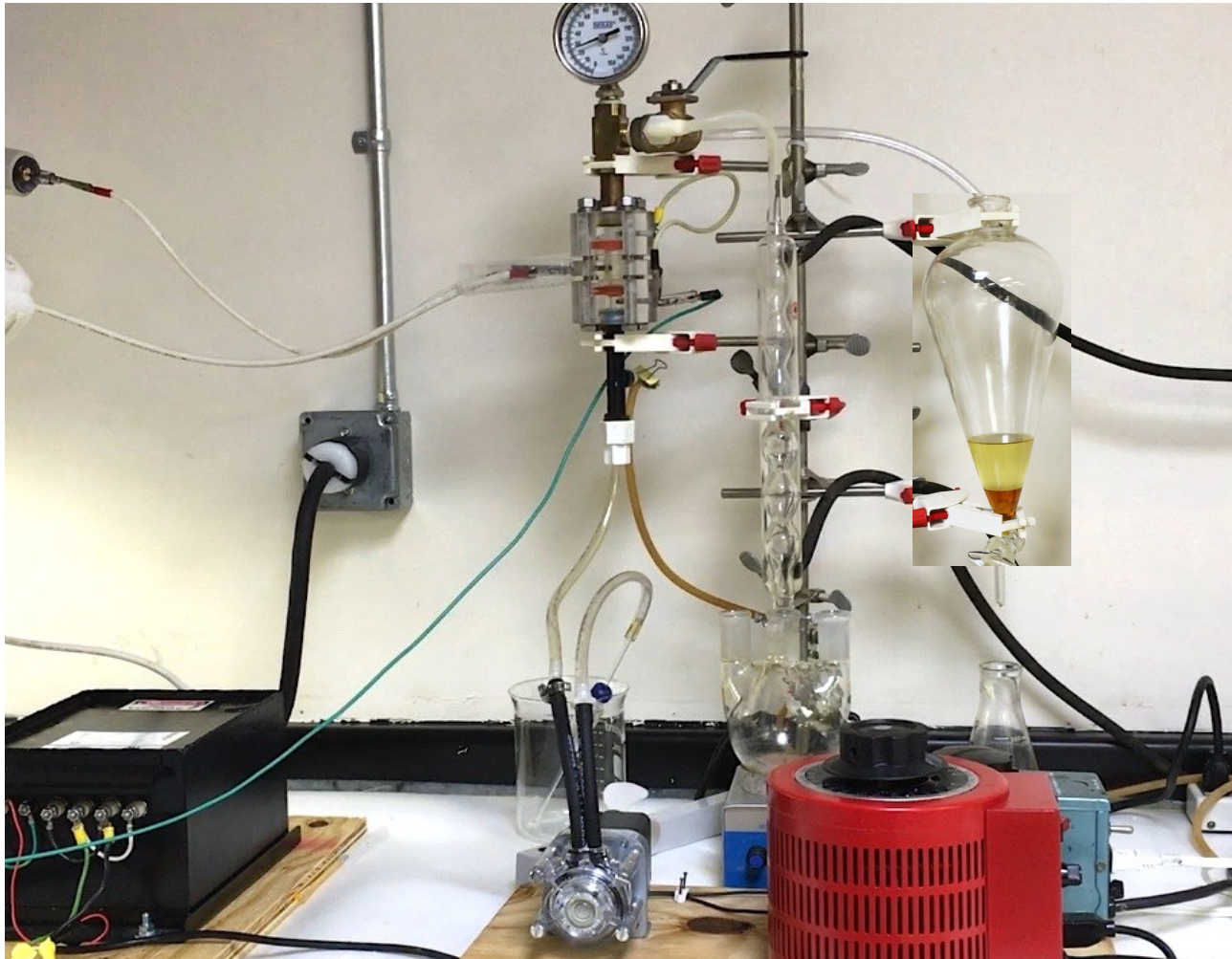


Portable biodiesel production system

- Small size
- No preheating
- Continuous
- Fast reaction
- Fast separation
- Flexible amount
- Flexible location
- Easy operation



Lab-scale setup



Major Components

- Plasma reactor
- Mixing & pump
- High-voltage transformer

Design needs (2 BE or ME students)

1. Design a liquid–mixing & pump module for feedstock mixing and pumping

Requirements:

- Matching reactor flow rate
- Single operation of mixing and pumping preferred
- Small size
- Energy saving
- Ensuring mixing efficiency
- Achieving high conversion rate

Design needs (1 EE student)

2. Design/select a high-voltage transformer for plasma generation

Requirements:

- Meeting power needs
- Small size
- Energy saving
- Matching other parts

Design needs (1 EE or CS student)

3. Design a controlling module for system operation

Requirements:

- Space-efficient layout of each component
- Programmed control of sequenced on-off
- Space saving
- Energy saving

Goal: You turn it on and get biodiesel



- **Team composition**

BE – 1; ME – 1; EE-1; CS-1

- **Funding:**

This project will be funded by Sarah Wu, faculty at Biological Engineering for up to \$ 2,000.