

Name _____ Partner Name _____

TA Name _____ Section Letter _____ Day _____ Time _____

Experiment 5 Worksheet – Biodiesel Synthesis

Each student submits this individually

I. Partner Agreement: Both students in the pair get the same lab report grade. Split up partner assignments in part (a) and schedule a time to collaborate after lab in part (b).

(a) *Students are encouraged to work on report together during lab. The assignments below indicate who will put together or type the final responses.*

Name		
In-Lab Questions		
Experimental Methods		

(b) **“DO” Date:** _____ = when / how you'll meet or exchange work to discuss & proofread, at least 1-2 days before the DUE date

II. Data & Analysis

Type of vegetable oil _____ Volume of oil _____ mL

Molecular weight of triglyceride _____ g/mL millimoles of oil _____ mmol

Draw the structure of the triglyceride in your veg-oil-of-choice using the major fatty acid component(s).

Theoretical Yield Calculation:

Exp 5, II. Data & Analysis

Product Loss: list the amount and specific reason for the loss

Observations

Vegetable oil	Methanol and methoxide solution	Biodiesel	Glycerol

Yield of biodiesel = (theoretical yield) – (product loss) = _____ mg

* Note: This yield calculation is for the remote lab only. In-person, one would eyeball the volumes in test tubes.

Percent Yield = [(actual yield) / (theoretical yield)] x 100% _____ % Yield of Adduct

¹H NMR of biodiesel made from _____ oil

(draw structure with labels)

Signal	Integration (#H's)	Splitting	Chemical Shift Expected (ppm)	Chemical Shift Observed (ppm) Range is ok in alkyl region

Experiment 5 Notebook Pages

Start before lab, work on it during, turn in with the worksheet

- *Purpose*: Reaction scheme - starting material, reagents, product
- *Reagent table*: List the amounts (mg or mL and mmol), molar equivalents ("equiv."), and physical properties (MW, bp or mp, density, one-word hazard) of each chemical in the reaction scheme.
- *Procedure* (remote) – hand-drawn 'comic strip' with diagrams of all equipment and chemicals with amounts. Include pertinent notes from the Clean-up & Safety Table.

1. **Reaction setup** – all equipment and chemicals (name, structure, and amount)
2. **Reaction workup** – flow chart / diagrams of solution transfers and test tube contents
3. **Analysis** – NMR sample prep and rough sketch of ^1H NMR spectrum, identifying key signals