UMBC Biodiesel Planning Document

collaborative editing

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We plan to start the club back up this semester, attract new interest, and smoothly transition to new leadership after we’re gone. There is a public trello board set up to organize the work being done in a transparent way: <https://trello.com/b/Z3ZST1WY/umbc-biodiesel>. More permanent goals and information should still be in this document.

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# Objectives

## Short Term:

* Location
* Membership
* History/contact.

## Long term:

* Make biodiesel on the bench
* Get the generator to run on it
* Develop tests for quality
* Track observations.
* Focus on transparent operation, so club can continue on after leaders leave.

## Longer Term:

* Produce Biodiesel in quantity
* Fuel UMBC transit vehicles
* Find any other people willing to use UMBC Biodiesel

## Summer:

* \*Find a location.
  + Tanvi Gadhia (sustainability coordinator)
  + Facilities Manager
  + BAJA car people?
  + “try to connect to Celso Guitian <cguitian@umbc.edu nd explore this link for the space <http://www.umbc.edu/fm/facilities/space_plan.html>.”
  + Talk to Dr. Mang about real/perceived difficulties getting a new location.
* Figure out ownership/control of mailing list: <https://lists.umbc.edu/lists/info/biodiesel>
* Send out interest survey.
* Send out email to chemistry, engineering, environmental science majors
* \*Write a history, contact information, inventory list, old procedures
* \*Plan involvement fest
  + get poster from whoever has it. Ask scott, then laura.

## Fall:

* Find Funding (talk to Shawny White)
  + do we have funding left over?
  + Find funding sources?
* Elect new officers
  + \*President - Facilitator, will direct the organization in a good path, will meet with Vice President about the best choices for technical questions, the PR director for client help, and treasurer for advising with UMBC and money. Public face of club.
  + \*Vice President - In charge of technical planning and oversight. Includes
  + Treasurer - Help find funding, inventory.
  + Secretary - work with president on communication, outreach to student groups and college administration. Keep minute meetings.
  + PR Director- In charge of plan for getting donations and finding people to give finished Biodiesel too
* Appeal to Environmental Science majors to collect WVO and “sell” the Biodiesel
* Design a setup that will produce and test Biodiesel
* Make an invoice of all that we need to make the reactor
* Assemble reactor.
* Ask Dr. Mang about previous research

Search for Location:

# Club Document:

## Contact Information:

* Patrick Hixenbaugh: Co-restarter. [phixenb1@umbc.edu](mailto:phixenb1@umbc.edu), [patrick.hixenbaugh@gmail.com](mailto:patrick.hixenbaugh@gmail.com). 240-242-7449.
* Dan German: Co-restarter. dgerman10@gmail.com
* Anastasia Sarioglou: valued member 2011-2012. <la74658@umbc.edu>
* Scott Forster: President 2012-2013.
* Laura Blevins: President 2011-2012. [lblev1@umbc.edu](mailto:lblev1@umbc.edu), lblevins09@gmail.com,
* shelly? currently on a submarine
* Nick Selock: Former President. nselock1@umbc.edu
* Mike German: Former President. [migerman1@umbc.edu](mailto:migerman1@umbc.edu)
* Dr. Mang - current faculty advisor: [smang@umbc.edu](mailto:smang@umbc.edu)
* Dr. Arnold - previous advisor: [barnold@umbc.edu](mailto:barnold@umbc.edu) (interested in research, less production)

<https://lists.umbc.edu/lists/info/biodiesel>

## History:

(first draft, all heard second hand): Founded by Mike German, arrangements made with farm to produce biodiesel on their land. (Attach Mike’s ppt)

Someone donates a diesel generator to the club, and dies in a skydiving accident. Legality of the generator uncertain, but it is painted with “UMBC biodiesel.” <https://www.youtube.com/watch?v=qtFpbQChwnE>

Falling out with farm, trouble with farm wanting school funding for private vehicle purposes. Farm sues, school wins, farm buys old reactors, still makes biodiesel today

Nick is president. Biodiesel Club writes grant and wins imProve It award to [build a production facility at UMD agricultural facility. $30 000?

- How much of this money was spent and what was done? What is currently at that facility?

- This money is no longer ours to access.

(first hand) 2011. Laura is president, Dr. Mang is the advisor. Club experiments with acid prewash and makes 1 L batches of biodiesel in Chemistry Building. A lab notebook exists somewhere from this period documenting our procedures and our results.

2012. Scott is president. Club loses access to Chem building space, and fails to find new location. Club gradually morphs into interest group. Took some field trips to a biodiesel production facility 45 min away (where?).

Dr. Mang as part of Chem 311L allows students to “research” aspects of biodiesel production. There may be interesting information as a result.

As of summer 2013. Scott is stepping down as president. Dan and I are restarting the club.

Links:

<http://proveit5.tumblr.com/>

<http://my.umbc.edu/groups/biodieselclub>

<https://www.facebook.com/pages/UMBC-Biodiesel-Project/>

## Inventory List:

Current inventory

* Assorted Pumps (i’ll take inventory next week). Chem 271 now, but soon to be stored on 5th floor of chem building. Possible long term storage in TRC basement.
* Generator Trailer, not be legally registered to us as a vehicle.
* (Unconfirmed) equipment still at UMD ag center?

Past inventory (no longer ours)

* 60 gal reactor
* Chemical storage tote
* ???

## Previous Chemical Procedures:

* Acid Prewash: removes free fatty acid (FFA) content from waste vegetable oil (WVO)
* Transesterification: Turns WVO into Fatty Acid Methyl Esters (FAME), another word for biodiesel. Produces Glycerol as a side product. Methanol and KOH are the main necessary reagents.
* Washing: removes methanol, soap impurities, etc.
* See documents attached at “<http://my.umbc.edu/groups/biodieselclub>” and lab notebooks.

# Other Resources:

* powerpoints
* not sure what else to put here yet

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Ideas:

* Use a citation manager like zotero or endnote to collect journal articles and other references that will help us.

Meeting with Dr. Mang:

* Our storage closet is CHEM 548, and it can be permanent. We could even check out a key to it eventually. There is also a pump stored in the physical chem lab.
* Teaching labs will never be used for Biodiesel. If the Administration really liked what we were doing, they’d build us a new space.
* What we should do:
  + Find all the research professors who are doing projects complementary to biodiesel. Chem, ChemE, Bio,
  + See if we could work with them -- integrate biodiesel into their research, help them publish more articles per year
  + Mention that we are willing to apply for funding: URAs (due date Feb 27, for funding starting in Fall.) Each individual in the club can apply for one.
  + Optimal scenario: partner with professor this fall, begin experiment, and attract members for spring who can take over.
* Scott Forster was close to getting set up in TRC? Ask him.
* Scott Johnson does biofuels in TRC
* Make small enough amounts of biodiesel that we can dispose them or run in generator (me: we could compress air for energy storage?)
* Treasurer Training
* Ask environmental health and safety office about anything we’re wondering about. For any research, we’ll need to be in a lab, obviously.

# Connections to Make

* Joe Reiger -- head of Commons (and transportation?) previous ally of biodiesel
* Andrea Winters - head of transportation
* Daniel Teage - transit manager
* Engineers without Borders
* Lee Blaney, Env. Engineering, INDS, EWB
* Steve McAlpine -- INDS
* Dr. Stephen Freeland, Director of INDS, kinetic sculptures
* Environmental Engineering director
* Environmental Studies & Environmental Science director
* “Class that goes out on friday behind the TRC” -- who told me this?
* Dept. Chair of Chemistry. (is that LaCourse?)
* Jenna McGlynn - Undergraduate Research Program, Director of Outreach
* Breaking Ground
  + Craig Berger
  + David Hoffman
  + civic agency, civic engagement
  + Grants
    - community service (us)
    - Faculty Teaching programs (for our faculty partners)

Meeting with Tanvi

-improved “connections to make” above

-investigate south campus, clean energy incubator. Bussing. Plans and permission

-Break into groups of outreach. One for admin, one for facilities, one for academic, etc.

-put together a blurb

what is biodiesel

what is biodiesel @ umbc?

how people can get involved

history of the club