University of Idaho
Department of Chemical Engineering
Inter-Office Memo

Date: Wednesday, January 14, 2009

To: Everybody Involved in Ch.E. 454 & MSE 414 Design Projects

From: David C. Drown ddrown@uidaho.edu

Subject: Design Expo 2009 registration

Web Registration: tentative deadline → probably 1st Friday in March
↳ by a link from: www.engr.uidaho.edu/expo

Information Required:

Project Title [descriptive]
↳ {team-centric, clever & commanding}

Abstract [50 word max]
↳ {audience is general public, colleagues, industry guests, potential employers, elected representatives, high school students & 5th/6th graders}

Project Contact [single e-mail student contact = team captain]
should be an …@vandals.uidaho.edu address

Sponsor [company name, contact person, how to contact = email or phone number, *guesstimated relative* $ value]

Department [Chemical Engineering]

Advisor(s) [Dr. David Drown, (+others)]

Type of presentation [technical session, poster, booth]
each 454 & 414 project will give oral presentation at technical session
→ you can also choose to enter a poster or a booth display but not both - poster is part of booth if you choose to enter a booth.
→ Chem-E-Car will do a booth, technical session optional

Exhibit needs [technical session's simply enter "Power Point"]
identify any special needs unique to your project → booth's utilities such as electrical power needs = how many outlets, wattage?
Chem-E-Car = needs ~50 foot long runway adjacent to booth

Team Members [all students & their major Dept.]
Full name, correct spelling → this is how it will appear in the program booklet; might also need each person's email?

Example student Abstracts from past years:

Title: UV Degradation of TMAH in Semiconductor Waste Streams

an oral + poster

Abstract: *Tetramethyl ammonium hydroxide (TMAH) waste is generated in photolithography processes in the semi-conductor industry. A bench scale continuous flow system has been developed using Ultra-Violet light (UV) degradation to destroy the TMAH. The flow system is designed to treat the TMAH before the waste is combined with the overall waste leaving a plant.*

Title: Impact of Iron Phosphate Recycle in Wastewater Treatment

an oral + poster

Abstract: *Iron can be used in a moving bed sand reactor to remove phosphorous from municipal wastewater. In the Hayden Wastewater treatment plant the waste stream from this process is pumped to the head of the plant. The goal of this project was to track where the phosphorous and iron leave the system as well as evaluate how phosphorous and residual iron left over from the bed reactor impact the performance of the entire system.*

Title: Methanol Recovery During Bio-diesel Production

Abstract: *Pacific Bio-diesel® has developed a manufacturing process to produce market-ready bio-diesel from waste restaurant frying oil. The primary expense of the process is methanol reagent, and too much is currently wasted for the process to be economically feasible. This project experimentally obtained needed data and designed a full scale methanol recovery process that will be integrated into the pre-existing Pacific Bio-diesel® facilities. The design maximizes the methanol recovery with a minimum of capital investment and operating cost to Pacific Bio-diesel®.*

Title: Carbon Dioxide Separation from Flue Gases; Clathrate Formation and Subsequent Sequestration Options

Abstract: *A bench-scale separation technique utilizing clathrates was developed to reduce carbon dioxide emissions from power-generation facilities. Carbon Dioxide gas is encapsulated inside water crystals at high pressures and low temperatures. Clathrates can be stored in the ocean at a depth below 800 meters or dissociated to obtain carbon dioxide gas.*

Title: AIChE Chem-E-Car Hydrogen Fuel Cell

an Expo Booth only

Abstract: *To design a shoebox sized car that is powered by a chemical reaction to compete in the AICHE Chem Car Competition. The goal of the competition is to control the chemical reaction in order to go a given distance carrying a specified load, both announced one hour prior to the first run. Our design employs a proton exchange membrane using hydrogen gas and air as fuel.*