

REGISTRATION

Hands-on Short Course on Design and Operation of Pyrolysis Technologies

Date: Flexible

(Please Type or Print Clearly) Name: \_\_\_\_\_

This name will appear on your certificate of Training

Title: \_\_\_\_\_

Company: \_\_\_\_\_ Mailing

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip

Code: \_\_\_\_\_ Country: \_\_\_\_\_

Phone: \_\_\_\_\_ Fax: \_\_\_\_\_ E-

mail: \_\_\_\_\_

Name Card (you would like to be called): \_\_\_\_\_

Name and phone number to contact in case of emergency: \_\_\_\_\_

The registration fee per person is US \$1,500. Participants must inform BETA Lab of preferred exact dates of training program. Applications are accepted under the terms described in the accompanying short course program or a revised program agreed upon by participant and BETA Lab. Payment by check drawn on a U.S. bank or an International cashier's check in U.S. dollars must accompany applications.

Method of Payment (mark one)

Checks payable to Texas A&M AgrLife Research.

If paying with credit card please include type of card:

American Express      Visa      Master Card      Diners Club

Card Number: \_\_\_\_\_

Name of Card Holder: \_\_\_\_\_ Exp. Date: \_\_\_\_\_

Signature: \_\_\_\_\_ Total Amount: \$ \_\_\_\_\_

Mail or fax this application to:

Cheryl Yeager  
Business Coordinator  
Biological and Agricultural Engineering Department (BAEN)  
Texas A&M University  
College Station, Texas 77843-2476 U.S.A.  
Tel: 979-845-3994; Fax: 979-845-3936  
E-mail: business@baen.tamu.edu

## Hands-on Short Course on the Design and Operation of Pyrolysis Technologies (1 Week)

Prepared and Organized by the BioEnergy Testing and Analysis Lab (BETA Lab)  
Biological and Agricultural Engineering Department  
College of Agriculture and Life Sciences (COALS)  
Texas A&M University  
College Station, TX 77843-2476 U.S.A.

### Training Pedagogy

This training program is a combination of Lectures and Computational Exercises in the morning and actual hands-on exercises in the afternoon. Each training lecture is loaded with engineering calculations and the design of pyrolyzers. At the end of the training program, the trainee will have learned all basic skills in becoming a skilled operator of a pyrolyzer or process engineer. The trainee will also receive a hardcopy of complete set of training materials.

### Schedule of Lectures/Computations and Lab Activities

#### Sunday or Day 0, Arrival of Trainee

#### Monday or Day 1

##### Morning Activities

Tour of Lab Facilities of Overview of Training Program

Lecture 1: Overview of Pyrolysis Process and Products Produced

Lecture 2: Feedstock for Making Biooil, Biochar and Synthesis Gas

Computation 1: Computations and Yield Prediction and Sizing of Plants

##### Afternoon Activities

Lab 1: Biomass Analysis Exercises in Preparation for Thermal Conversion (HV, Proximate and Ultimate)

#### Tuesday or Day 2

##### Morning Activities

Lecture 3: Equipment and Instruments Required for Pyrolysis Process

Lecture 4: Design of Slow and Fast Pyrolyzers

Computation 2: Calculations of exposure time for biomass in various types of pyrolyzers

##### Afternoon Activities

Lab 2: Measurements of syngas in a gas chromatograph and biooil and biochar

#### Wednesday or Day 3

##### Morning Activities

Lecture 5: Difference between Torrefaction and Pyrolysis

Lecture 6: The Fast Pyrolysis Processes and Design of Fast Pyrolyzers

Computation 3: Fluidization Calculations

##### Afternoon Activities

Lab 3: Pyrolysis of various biomass using batch reactor

Thursday or Day 4

Morning Activities

Lecture 7: Equipment and Technology for Biooil, Biochar and Syngas Production:

Lecture 8: Advanced Pyrolysis Production Processes and Upgrade of Biooil into Hydrocarbons

Computation 4 Equipment Design and Control Systems Introduction

Afternoon Activities

Lab 4: Operation of Continuous Flow Auger Pyrolyzer

Friday or Day 5

Morning Activities

Lecture 9: Strategies for the Establishment of Small and Medium-Scale Biofuels Plant

Lecture 10: Design of Commercial Systems and Economics of Bioethanol Production

Computation 5: Development of Business Plan and Simple Economic Calculations and Projections

Including SAE Standards for Engine Testing

Afternoon Activities

Lab 5: Operation of State-of-the Art Fluidized Bed Pyrolyzer

Saturday or Day 6

Field Visit and Tour:

- a. Visit a Commercial Biofuel Facility (Dayton, Texas)
- b. Awarding of Certificates

### Summary of Training

Time	Day of the Week						
	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
AM	Arrival of Trainee	Tour/Lect 1	Lecture 3	Lecture 5	Lecture 7	Lecture 9	Tour of Commercial Facility
		Lecture 2	Lecture 4	Lecture 6	Lecture 8	Lect 10	
		Comp 1	Comp 2	Comp 3	Comp 4	Comp 5	
		Lunch Break					
PM		Lab 1 Biomass Analysis	Lab 2 Product Analysis	Lab 3 Batch Pyrolyzer	Lab 4 Auger Pyrolyzer	Lab 5 Fluidized Beds	Awarding and Trainee Departure

For additional technical information, write, call, fax or e-mail to:

Dr. Sergio C. Capareda

Head, BioEnergy Testing and Analysis Lab

Biological and Agricultural Engineering Department (BAEN)

College of Agriculture and Life Sciences (COALS)

Texas A&M University

College Station, Texas 77843-2476 U.S.A

Tel: 979-458-3028, Fax: 979-845-3936

Email: [scapareda@tamu.edu](mailto:scapareda@tamu.edu)

Website: [betalab.tamu.edu](http://betalab.tamu.edu)