



ATP³ Workshop Spring 2016
Principles and Processes: Algae Culture Maintenance, Production and
Downstream Processing



May 16-20, 2016
at Santa Fe Community College,
Santa Fe, NM and
Los Alamos National Lab's New Mexico
Consortium, Los Alamos, NM

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**Principles and Processes:
 Algae Culture Maintenance,
 Production and Downstream
 Processing**



When: May 16-20, 2016

Where: Santa Fe Community College
 6401 Richards Ave., Santa Fe, New Mexico 87508
 New Mexico Consortium Biological Laboratory
 100 Entrada Drive, Los Alamos, NM 87544

Instructors: Tom Dempster (AzCATI)
 Milton Sommerfeld (AzCATI)
 Schonna Manning (UTEX)
 Several SFCC and NMC instructors (TBD)

Cost: \$1600 (includes training, materials and 3 lunches)

The Spring 2016 ATP³ workshop will occur May 16th-20th at Santa Fe Community College (SFCC) and the Los Alamos National Lab's New Mexico Consortium (LANL NMC). These unique facilities will give participants incredible insights into aspects across the algae value chain and the food, energy and water nexus. Lectures will cover the fundamentals of managing microalgal cultures, culturing techniques, measuring biomass, harvesting and processing technologies, as well as life cycle analysis and operations at the production scale. Participants will have opportunities to work in the laboratory and learn how to measure culture density (cell counting and optical density), use a light and fluorescence microscope, use flow cytometry, perform gravimetric analyses (dry weight and ash-free dry weight), and techniques to analyze biomass compounds.

Join us while we learn about algae at LANL's NMC, one of our nation's leading national labs, and impressive algae testbed and downstream capabilities at SFCC. Participants will hear from SFCC and LANL research scientists and tour state-of-the art facilities at both workshop sites. Topics presented are relevant to those interested in obtaining a broad overview on the biology, growth and commercialization of microalgae. Participants are encouraged to ask questions, share information and network. Printed and electronic materials and a certificate of completion will be provided. Enrollment is limited to 15 participants on a first-come basis. For more information about this and future workshops please visit www.atp3.org/education.

Tentative Agenda

Day 1: May 16th (1 pm – 5 pm)

Overview of ATP³, AzCATI and UTEX
 Tour of Santa Fe Community College Algae Testbed
 Introduction to Microalgae

- Lab Activities: Field sampling and light microscopy to observe diverse microalgae

Day 2: May 17th (8 am – 5 pm)

Overview of Algae Research at LANL/NMC
 Practical Applications: Products and Bioremediation
 Fundamentals of Culturing Microalgae
 Measuring Culture Density and Growth Rates

- Lab Activities: sampling from open ponds; measuring culture dry weight (DW) and optical density (OD)

Day 3: May 18th (8 am – 5 pm)

Screening for Desirable Characteristics
 Comparison of Cultivation Systems
 Principles of Scaling Up Cultures
 Culture Monitoring and Mitigation of Contaminants
 Principles and Operation of Flow Cytometry

- Lab Activities: flow cytometry; measuring ash-free DW

Day 4: May 19th (8 am – 5 pm)

Harvesting, Dewatering and Biomass Processing Methods
 Routine Biochemical Analysis
 Considerations for Life Cycle and Techno-Economic Analyses
 Bioremediation of Wastewater

- Lab Activities: analysis of lipids using thin-layer chromatography; overview of harvesting, dewatering and processing instrumentation; introduction to data entry and graphical analysis

Day 5: May 20th (8 am – 11 am)

Data Analysis and Discussion of Results
 Sources of Current Industry Information
 Workshop Conclusion and Distribution of Certificates