



**ATP<sup>3</sup> Workshop**  
**Fall 2017**



**Large-Scale Algal Cultivation, Harvesting  
and Downstream Processing**

**November 6-10, 2017**  
**at AzCATI, Mesa, AZ**

**AzCATI**

Arizona Center  
for  
Algae Technology and Innovation

**Contact: Dr. Thomas Dempster**  
**[dempster@asu.edu](mailto:dempster@asu.edu)**

**Mobile: 480.320.0213**

7418 Innovation Way South, ISTB-3 Room 103, Mesa, AZ 85212  
(480) 727-5415 info@atp3.org www.atp3.org



## Large-Scale Algal Cultivation, Harvesting and Downstream Processing



**When:** November 6-10, 2016

**Where:** AzCATI  
 ASU Polytechnic Campus  
 7418 Innovation Way South  
 ISTB-3 Room 103  
 Mesa, Arizona 85212

**Instructors:** Tom Dempster (AzCATI, ASU)  
 Schonna Manning (UTEX, UT-Austin)

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

This workshop will cover practical applications of growing and managing microalgal cultures at production scale, including methods for handling cultures, screening strains for desirable characteristics, identifying and mitigating contaminants, scaling up cultures for outdoor growth, harvesting and processing technologies, as well as the analysis of lipids, proteins and carbohydrates. Related laboratory and field training will include numerous hands-on opportunities for participants to collect and perform routine sample measurements, monitor cultures for contaminants, and evaluate the chemical composition of algal biomass.

This workshop is ideal for those interested in obtaining a broad overview of the management of microalgal cultures at scale, and for advanced students and trainees interested in the practical applications of microalgae. Participants are encouraged to ask questions, share information and network. Printed and electronic materials will be included, and a certificate of completion will be provided at the conclusion of the workshop. Workshop enrollment is limited to 15 participants and will be filled on a first-come basis.

ATP<sup>3</sup> workshops offer a diverse range of topics pertaining to the management and processing of microalgal cultures, and uses of their products. Laboratory and field training are led by highly-trained scientists and engineers. For more information about this and future workshops please visit [www.atp3.org/education](http://www.atp3.org/education).

### Tentative Agenda

#### Day 1: November 6 (1 pm – 5 pm)

Overview of ATP<sup>3</sup>, AzCATI and UTEX  
 Tour of AzCATI Laboratory and Testbed  
 Introduction to Microalgae

- Lab Activities: using the light microscope to observe diverse microalgae

#### Day 2: November 7 (8 am – 5 pm)

Practical Applications: Products and Bioremediation  
 Culture Monitoring and Mitigation of Contaminants  
 Comparison of Cultivation Systems  
 Principles of Scaling Up Cultures

- Lab Activities: field sampling from open ponds and panel reactors; microscopy of field samples; evaluating culture dry weight (DW); measuring optical density (OD) and growth rates; handling and scaling-up cultures

#### Day 3: November 8 (8 am – 5 pm)

Outdoor Culture Maintenance and Monitoring  
 Harvesting and Dewatering Techniques  
 Overview of Biomass Processing Methods

- Lab Activities: measuring ash-free DW; overview of harvesting, dewatering and processing instrumentation

#### Day 4: November 9 (8 am – 5 pm)

Screening Strains for Desirable Characteristics  
 Routine Biochemical Analysis  
 Mass Balance

- Lab Activities: analysis of biomass carbohydrates and proteins; extraction and analysis of lipids using thin-layer chromatography; introduction to data entry and graphical analysis

#### Day 5: November 10 (8 am – 11 am)

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