SHORT COURSE DETAILS

This short course is intended for anyone who would like to understand the fundamental and practical aspects of continuous flow thermal processing with special emphasis on aseptic processing of viscous and multiphase foods. It will begin with the fundamental principles associated with flow, heat transfer, and kinetics. This will be followed by equipment options (for heating, pumping, and measurement), thermal process design, quality issues & process optimization, and advanced technologies such as microwave & ohmic heating. There will be a tour of the pilot plant facilities at the Department of Food, Bioprocessing and Nutrition Sciences (Schaub Hall) at North Carolina State University (http://www.ncsu.edu/foodscience) and also an opportunity to see the results of the work performed through the Center for Advanced Processing and Packaging Studies (CAPPS) – http://fst.osu.edu/capps at various times during the short course. The short course will conclude with an overview of sensors for process validation and an insight into the regulatory (FDA) aspects related to thermal processing.

MEETING LOCATION

The short course will be held at:
Dept. of Food, Bioprocessing & Nutrition Sciences (Schaub Hall)
North Carolina State University
400 Dan Allen Dr.
Raleigh, NC 27607
Phone: 919-515-2957
http://www.ncsu.edu/foodscience

The building (Schaub Hall) is at the corner of Dan Allen Dr. & Sullivan Dr. on the NC State University campus.

The closest airport is the Raleigh-Durham Airport (RDU). It is approximately 13 miles from NC State University.

NEARBY HOTELS

1. Holiday Inn: 919-828-0811 (1.5 miles away)
   1707 Hillsborough St., Raleigh, NC 27605
2. Clarion Hotel: 919-832-0501 (2.5 miles away)
   320 Hillsborough St., Raleigh, NC 27603
3. Holiday Inn Express: 919-854-0001 (3 miles away)
   3741 Thistledown Dr., Raleigh, NC 27606
4. Days Inn: 919-828-9081 (3 miles away)
   300 N. Dawson St., Raleigh, NC 27603
5. Ramada Inn: 919-832-4100 (3 miles away)
   1520 Blue Ridge Rd., Raleigh, NC 27607
6. Sheraton: 919-834-9900 (3 miles away)
   421 S. Salisbury St., Raleigh, NC 27601
7. Raleigh Marriott City Center: 919-833-1120 (3 miles)
   434 Fayetteville St. Mall, Raleigh, NC 27601
8. Comfort Suites: 919-854-0502 (4 miles away)
   1200 Hurricane Alley way, Raleigh, NC 27607
9. Hampton Inn & Suites: 919-233-1798 (5 miles away)
   111 Hampton Woods Lane, Raleigh, NC 27607
10. Candlewood Suites: 919-468-4222 (5 miles away)
    1020 Buck Jones Rd, Raleigh, NC 27606
**PROGRAM**

**Wednesday (Oct. 5, 2011)**

7:30 to 8:00  Registration & Breakfast
8:00 to 8:15  Welcome & Introductions (Swartzel)
8:15 to 8:45  Pasteurization, ultrapasteurization, hot fill, ESL, UHT (Sandeep)
8:45 to 9:30  Kinetics of chemical, microbiological, and enzymatic reactions (Swartzel)
9:30 to 10:00  Properties and their Measurement (Sandeep)
10:00 to 10:15  BREAK
10:15 to 11:00  Temperature, pressure, and flow measuring devices (Farkas)
11:00 to 11:45  Pumps, mixers, and back pressure devices (Cartwright)
11:45 to 12:00  CAPPS: An Industry-University-Government Center (Swartzel)
12:00 to 1:00  LUNCH
1:00 to 1:30  Heat exchangers and heat transfer coefficients (Sandeep)
1:30 to 2:00  Heat exchanger design (Sandeep)
2:00 to 2:30  Thermal process evaluation (Sandeep)
2:30 to 3:00  Physico-chemical aspects of thermal processing (Sandeep)
3:00 to 3:15  BREAK
3:15 to 4:00  Quality considerations, process optimization, and scale-up (Miles)
4:00 to 5:00  Pilot plant tour (Cartwright, Simunovic, Sandeep)
6:30 to 9:30  RECEPTION & DINNER

**Thursday (Oct. 6, 2011)**

7:30 to 8:00  Continental Breakfast
8:00 to 8:45  Microwave and radio frequency heating (Simunovic)
8:45 to 9:30  Ohmic heating (Sastry)
9:30 to 10:00  Time temperature integrators (Simunovic)
10:00 to 10:15  BREAK
10:15 to 11:00  Sensors and process monitoring (Simunovic)
11:00 to 12:00  Validation of continuous heat processes: FDA perspective (Anderson)
12:00 to 1:00  LUNCH

**Disclaimer:** Under extenuating circumstances, we may have to make substitutions for speakers/topics/times

**REGISTRATION**

Name: ______________________________
Organization: _________________________
Address: _____________________________
_____________________________ _____________________________
Phone: _____________________________
E-Mail: _____________________________

**By Aug. 5**  **After Aug. 5**
Regular $1,000 $1,200
Govt. $800 $1,000
Academia $600 $800

No REFUNDS on cancellations after Aug. 5.

Mail Registration Form to:
Dr. Ken Swartzel
UltrAseptics
19 W. Hargett St., Suite 606
Raleigh, NC 27601-2937

Checks should be made payable to “UltrAseptics Inc.”
For credit card payment, call 919-889-6895

**For More Information, Contact:**
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Dr. Josip Simunovic
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