

# Tubing & Profile Extrusion Seminar

## Main Extruder Components

- Screw & barrel
- Motor & reducer
- Heating & cooling
- The die

## Important Material Properties

- Bulk properties
- Thermal properties
- Melt flow properties
- Other properties

## Operational Principles of Extruders

- Solids conveying
- Plasticating
- Melt conveying
- Venting
- Other functions

## Instrumentation of the Extruder

- Temperature
  - Sensors
  - On-off, proportional, and 3-mode controllers
  - Proper Adjustment
  - Deep and shallow sensing
- RPM
  - Analog vs. digital
  - RPM synchronization

## Screw design

- Standard extruder screw
- Variations on standard screw

After the regular laboratory session there will be a demonstration of "direct extrusion". Using patented mixing techniques, recently developed by Dr. Rauwendaal, the functions of mixing additives and of precision extrusion, which formerly required a twin screw extruder plus a single screw extruder can now be accomplished totally within a single screw extruder (or MIXTRUDER)

## Laboratory

Similar to Day 2. Except that this time you will be using free air extrusion to make bubble design (tapered tubing on a state-of-the-art line. Both outer diameter and wall thickness of both large and small tubing sections will be under automatic control. You will also be using the latest in Statistical Quality Control (SQC) techniques to monitor the quality level of the tubing.

After this laboratory session there will be a demonstration of the new ALTERNATE POLYMER extrusion system, whereby the polymer varies seamlessly from 100% polymer A to 100% polymer B along the length of the tube.

## Statistical Quality Control

- Concepts and purpose
- Individual line
- Plant wide

## Start-up and Service of Extruders

- Initial check-out
- Quick electrical checks
- Service tips

## Afternoon Day 3

The seminar officially ends at 1 p.m. However, participants are invited to remain as long as desired to get additional hand-on experience and to discuss special problems and applications.

Registration of this seminar is limited to Plastics Processors!

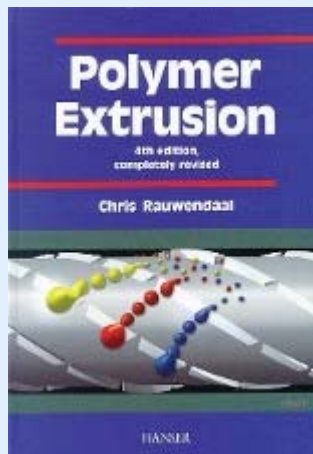
- Barrier type screws
  - Multi-stage screws for venting
  - How to improve performance by optimizing screw geometry
- Die Design
- In-line dies
  - Crosshead dies
  - Multi-lumen dies
- Melt Pumps
- Theory
  - Control
- Troubleshooting the Extrusion Process
- Machine or material problems
  - Wear problems
  - Melting problems
  - Melt conveying problems
  - Solids conveying problems

### Laboratory

During this demonstration you will have the opportunity to actually string up and operate a tubing line. For tutorial purposes, operation will be manual, so that you can see how each of the adjustments on the line affects the final properties of the tubing.

### Location

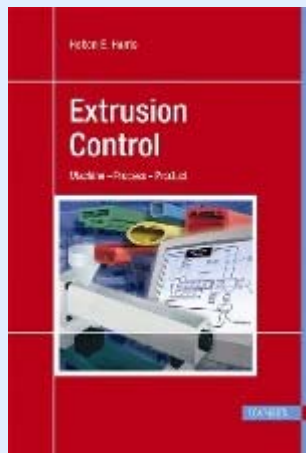
Harrel Inc.  
16 Fitch Street  
E. Norwalk, CT 06855



### Books authored by Chris Rauwendaal:

- [Polymer Extrusion](#) available with registration in any seminar for a discounted price of \$75.00 Check appropriate box on registration form.
- Understanding Extrusion
- Troubleshooting the Extrusion Process
- SPC in Injection Molding and Extrusion
- Polymer Mixing
- Mixing in Polymer Processing

### Book authored by Holton Harris will be part of the handout.



The course fees are:	Prior to April 12	April 12-25	After April 25
Tubing & Profile Extrusion:	\$895.00	\$995.00	\$1095.00
3rd attendee discount 5%:			
Polymer Extrusion Bk <input type="checkbox"/> \$75.00			
Total:			

A 5% discount will be given for the 3rd and up attendees from the same company. The course fees include lunch for first two days and the handout material.

**Cancellations:** A refund, less a \$100.00 cancellation fee, will be made if the registration is cancelled in writing by or on April 11, 2008. Rauwendaal Extrusion Engineering, Inc. reserves the right to cancel one or more seminars or substitute instructors. Should this occur the attendees will be notified. We do not take any responsibility for penalty fees or any other cost that may be incurred due to cancellation. We recommend that you book travel with refundable fares. Registrants who fail to attend are liable for the fees of the course registered for.

Fax Registration to 530-269-1084

Name:			
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Company:			
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Charge:	Visa <input type="checkbox"/>	MasterCard <input type="checkbox"/>	American Express <input type="checkbox"/>
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10556 COMBIE RD P.M.B. 6677. AUBURN, CA 95602-8908  
[www.Rauwendaal.com](http://www.Rauwendaal.com) Ph: 530-269-1082 Fx: 530-269-1084