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The Science and Technology of Small Particles ™

SYLLABUS

Saturn 5205 Operator Training

INSTRUCTIONAL GOALS

This course introduces students to the components, operation, and theory of the Saturn 5205 for particle size analysis.

At the end of this course, you will:

- Understand the basic fundamentals of sample preparation and dispersion, including sampling, choosing an appropriate analysis liquid and surfactant, the stages of dispersion, dispersion techniques, and sample loading.
- Understand the basic fundamentals of scattering theory, including Mie theory, particle size distribution calculations, and Saturn operational theory.
- Be able to utilize all Saturn software menus and screens to efficiently obtain accurate and reproducible data.
- Know how to use the operating software to operate the Saturn and MasterTech.
- Be able to properly configure any report format, a combination of reports, and obtain analysis information according to your laboratory requirements.
- Be able to make all user level repairs, adjustments and checks, and locate equipment problems using the Troubleshooting section of the Operator's manual.
- Be able to verify dispersion quality, interpret and optimize the Goodness of Fit plot.

NEEDS AND RESOURCES

Required Background

To successfully complete this course, you must:

- Have some minimal exposure to a Saturn in a laboratory environment.
- Have reviewed the Operator's manual.

Required Materials

The following provided materials will help you successfully complete this course:

- Operator Training Study Guide with Lecture Presentations
- Notepad
- Pen
- Highlighter
- Micromeritics Thumb Drive containing presentations, relevant application notes and Study Guide

Additional Print Resources

The following publications will also be provided:

- Webb, Paul A. and Clyde Orr. Analytical Methods in Fine Particle Technology. Norcross, Georgia, U.S.A.: Micromeritics Instrument Corporation, 1997.
- Related Application Notes and Technical Tips

Online Resources

Additional information can be found at:

- www.micromeritics.com

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Day 1

Session	Activity	Description	Time
-	-----	Introduction	8:00 AM – 8:15 AM
1	**LAB**	System and Software overview; obtaining a proper background; sample prep and dispersion	8:15 AM – 10:00 AM
2	**LECTURE**	Light Scattering Theory and the Operation of the Saturn DigiSizer	10:00 AM – 11:30 AM
	-----	**LUNCH**	11:30 AM – 1:00 PM
3	**LAB**	Preparation and analysis of garnet using external dispersion/The programming and use of parameter files.	1:00 PM – 2:00 PM
4	**LAB**	Preparation and analysis of garnet using internal dispersion. (Advanced mode using "Replace")	2:00 PM – 3:00 PM

Day 2

Session	Activity	Description	Time
-	-----	Introduction	9:00 AM – 9:15 AM
2	**LAB**	A review of the options menu, using undispersed calcium carbonate as an example of the correlation between obscuration and the sample size as well as a look into the multiple scattering effect.	9:15 AM – 11:30 AM
	-----	**LUNCH**	11:30 AM – 1:00 PM
3	-----	**FACILITY TOUR**	1:00 PM – 2:00 PM
4	**LAB**	Analysis of coarse alumina as an example of the importance of flow rate and its correlation to measured particle size and obscuration.	2:00 PM – 4:00 PM

Day 3

Session	Activity	Description	Time
-	-----	Day 3 Introduction and Brief Questions/Review of Day 1 & 2	8:00 AM – 8:15 AM
1	**LECTURE**	A Review of Report Options, Data Reduction and Class-Generated	8:15 AM – 10:00 AM
2	**LECTURE**	Advanced Topics	10:15 AM – 11:15 AM
	-----	**LUNCH**	11:30 AM – 1:00 PM
3	**SERVICE**	A discussion of installation, calibration, and maintenance	1:00 PM – 2:30 PM
4	**ASSESSMENT**	Survey & Assessment	2:30 PM – 3:00 PM

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POLICIES AND PROCEDURES

General Rules:

Attendance to all scheduled lectures and labs is very important due to the length of the course. Please make every attempt possible to avoid tardiness. If you do come in late, please enter through the rear door of the classroom so as to not disrupt or distract your fellow students. If you are unable to attend a day or part of a day due to emergency, please notify the Training Coordinator immediately.

Remember, you and/or your company have a business need for you to attend and complete this course to insure that you are getting the most out of your/your company's investment in your Micromeritics instrument.

Grading Policies:

You will be periodically evaluated throughout the course during oral discussions and demonstrations. There are also questions in your Operator Training Study Guide that will be discussed at the completion of each unit. Please be prepared to answer questions about the previous lessons content. A brief assessment exam will be given at the end of the course to verify that learning objectives are met by each student.

Grading Scale:

There is no grading scale for this course and you will not fail. Again, you and/or your company have a business need for you to attend and complete this course to insure that you are getting the most out of your/your company's investment in your Micromeritics instrument .

ADDITIONAL INFORMATION

Lunch will be provided by Micromeritics. Please inform the Training Coordinator of any special dietary needs.

CONTACT INFORMATION

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