Chromatography Column Packing: Foundations and Applications

Course fee: $3,000
For course dates, visit go.ncsu.edu/btec_short_courses

A well-packed chromatography column is critical to chromatographic separations. Low quality chromatography column packing leads to uneven mobile phase distribution and poor resin contacting, ultimately leading to lower yields, less separation and reduced product quality. This course is designed to explain and demonstrate the factors that influence column packing from both a theoretical and hands-on perspective.

By attending this three-day course you will learn:

• Fluid mechanics of flow in packed beds
• Theoretical basis of mass transfer in packed beds
• The effects of incompressible versus compressible chromatography resin
• Different packing techniques
• Analytical methods for determining column packing quality
• Packing parameter selection to ensure a robust, reproducible packing procedure

For additional information, please contact BTEC Professional Development and Marketing Coordinator Erica Vilsaint at embrown4@ncsu.edu.

Course schedule

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<th>Day 1</th>
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<td>Lecture: General chromatography principles</td>
<td>Review of laboratory data</td>
<td>Review of laboratory data</td>
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<td>Lab: Small-scale pressure/flow/height curve determination</td>
<td>Lab: Chromatography media exercise/ microscopic resin examination</td>
<td>Lab: Large scale column packing – flow, pressure, and Axichrom packing</td>
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<td>Lecture: Mass transfer effects, HETP, and column packing evaluation</td>
<td>Lab: Small scale column packing – various packings</td>
<td>Lecture: Topic TBD</td>
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<td>Lab: Small scale column packing – slurry calculation, column evaluation, and flowrate/HETP determinations</td>
<td>Lecture: Process-scale column packing</td>
<td>Review of large-scale column packing</td>
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<td>Q&amp;A</td>
<td>Lab: Large scale column packing – flow, pressure, and Axichrom packing</td>
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REGISTER NOW: go.ncsu.edu/btec_short_courses
About the instructor

Dr. John van Zanten is an assistant teaching professor at BTEC. He teaches BEC 330, Principles and Applications of Bioseparations, which is part of BTEC’s core curriculum for the undergraduate minor in biomanufacturing, and the graduate course BEC 532, Biologic Processing Science. He also co-directs the QA/Analytical course that is provided annually under contract to U.S. Food and Drug Administration personnel. He is also developing a bioprocess control laboratory module for undergraduate chemical engineering students.

Before coming to BTEC in 2007, Dr. van Zanten worked for 15 years in federal laboratories and academic institutions such as the National Institute of Standards and Technology (NIST), Johns Hopkins University, and North Carolina State University. He has more than 25 years of experience in colloidal and macromolecular physical chemistry, biophysics and particle sizing in both national laboratories and academic institutions and has led research efforts in liposome formulation, nonviral gene delivery vector assembly and protein aggregation, as well as more traditional colloid, polymer, and surfactant systems.

He obtained a Bachelor of Science and doctorate in chemical engineering from the University of California at Los Angeles and received additional training as a National Research Council postdoctoral research associate at NIST.

What short course participants have said about other BTEC courses

“This was one of the best training courses I’ve taken! Thank you very much!”

“Great course—one of the best I have attended in almost 12 years!”

“Great course with great instructors! Made for a good learning environment.”

“The instructors are excellent—knowledgeable, well prepared, patient!”

Important information for short course participants

Location

This course is held on site at BTEC. The Golden LEAF BTEC building is located at 850 Oval Drive on NC State University’s Centennial Campus.

Payment

BTEC accepts payment from all major credit cards including American Express, Visa, and MasterCard. If you wish to pay by company check, please email melody_woodyard@ncsu.edu for additional information immediately after registering.

Discounts available

A 20% discount is available to:

• Employees of NC Biotech Manufacturers Forum (BMF) member companies
• Groups of five or more from one company registering for the same offering of this course
• Individuals registering for more than one course at a time
• Faculty/staff working in academic environments

Pre-course communication

Registered course participants will receive an email three weeks before the scheduled course with detailed information regarding travel to BTEC, parking information, and a short pre-course questionnaire.

Cancellation policies

CANCELLATION BY REGISTRANT

To cancel a registration and be eligible for a refund of course fees, you must notify BTEC by email. Fees are refunded according to the following schedule:

• 100% refund – If notification is received at least 15 business days in advance of course start date
• 75% refund – If notification is received 10–14 business days in advance of course start date
• 50% refund – If notification is received 6–9 business days in advance of course start date
• No refund will be issued if notice is received 5 or fewer business days in advance of course start

Substitutions may be made up to two business days prior to the course start date.

CANCELLATION BY BTEC

BTEC retains the right to cancel a professional development short course no less than 10 business days in advance of the scheduled course start date. Registrants will be notified by BTEC if a course is cancelled and will receive a full refund of registration fees paid. BTEC is not responsible for airfare penalties or other costs incurred due to cancellation.