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Nota di contenuto	Ultra-High Performance Liquid Chromatography and Its Applications; Contents; Preface; Contributors; Chapter 1 UHPLC Method Development; 1.1 INTRODUCTION; 1.2 METHOD DEVELOPMENT; 1.2.1 Gather Sample Information and Define Method Goals; 1.2.2 Scout Columns and Mobile Phases; 1.2.3 Analyze Scouting Results and Select Separation Conditions; 1.2.4 Optimize the Method; 1.2.5 Validate the Method; 1.2.6 Phase-Appropriate Method Development; 1.2.7 Very High Pressure and Frictional Heating in UHPLC; 1.2.8 Relevance of Various Instrumentation to Method Development 1.2.9 Method Resolution and Speed Requirements1.2.10 Example 1.1; 1.2.11 Example 1.2; 1.3 CONVERSION OF AN HPLC METHOD TO UHPLC; 1.3.1 Select a UHPLC Column with the Same Chemistry; 1.3.2 Measure Dwell Volumes of HPLC and UHPLC Systems; 1.3.3 Calculate Injection Volume, Flow Rate, Holding Time, and Gradient Segment Time; 1.3.4 Perform Verification Experiment; 1.3.5 Validate the Method; 1.3.6 Example 1.3; 1.3.7 Example 1.4; 1.4 CONVERSION OF A UHPLC METHOD TO HPLC; 1.5 SUMMARY; REFERENCES; Chapter 2 Method Transfer Between HPLC and UHPLC Platforms; 2.1 INTRODUCTION 2.2 TRANSFERRING HPLC METHODS TO UHPLC2.2.1 Fundamental Physical Relationships; 2.2.2 Types of UHPLC Applications; 2.2.3 Additional Fundamental Considerations; 2.2.4 Transfer of Isocratic

Methods from HPLC to UHPLC; 2.2.5 Cautions on Transferring Isocratic Methods from HPLC to UHPLC; 2.2.6 Transfer of Gradient Methods from HPLC to UHPLC; 2.2.7 Cautions on the Scaling of Gradient Methods from HPLC to UHPLC; 2.2.8 Case Studies and Recommendations; 2.2.9 Final Discussion of Practical Challenges; 2.2.10 Conclusions on the Transfer of Methods from HPLC to UHPLC

2.3 TRANSFERRING UHPLC METHODS TO HPLC PLATFORMS 2.3.1 UHPLC to Traditional HPLC Columns; 2.3.2 UHPLC to Superficially Porous Particle HPLC Columns; 2.3.3 UHPLC to HPLC Method Transfer; 2.4 TRANSFERRING LC METHODS TO OTHER LABS; 2.4.1 UHPLC Instrument Issues Encountered During Method Transfers; 2.4.2 Back to LC Basics; REFERENCES; Chapter 3 Practical Aspects of Ultrahigh Performance Liquid Chromatography; 3.1 INTRODUCTION; 3.2 EFFECT OF EXTRA-COLUMN VOLUME ON PERFORMANCE OF SUB-2  $\mu$ m PARTICLE-PACKED COLUMNS IN UHPLC; 3.2.1 Theoretical Considerations 3.2.2 Extra-Column Volumes and Column Volumes 3.2.3 Effect of Extra-Column Volume on Performance; 3.3 COLUMN PRESSURE AND FRICTIONAL HEATING; 3.3.1 Column Pressure vs. Particle Size; 3.3.2 Phenomenon of Frictional Heating; 3.3.3 Effect of Frictional Heating on Retention Factor; 3.3.4 Factors Leading to Frictional Heating; 3.3.5 How to Resolve Thermal Gradient Issues; 3.3.6 Effect of Pressure on Mobile Phase Characteristics; 3.3.7 Effect of Pressure on Retention Factor with Minimal Frictional Heating; 3.4 METHOD TRANSFER BETWEEN UHPLC AND HPLC AND OTHER TIPS 3.4.1 Column Dimension and Particle Size

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#### Sommario/riassunto

"This is the first resource to fully cover the instrumentation, method development, and applications of Ultra-High Performance Liquid Chromatography (U-HPLC). It details both the benefits and limitations of this method in the pharmaceutical industry, clinical research, the food industry, and environmental services. It covers U-HPLC topics coupled with ultra-violet detector (UV) and mass spectrometer (MS), instrumentation frequently used in solving complex molecules. This is an essential reference for scientists who utilize chromatographic techniques, including in academia, as well as pharmaceutical, biotechnology, chemical, food, environmental, and related industries"

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