

## ELECTROPHORESIS TECHNOLOGY: GLOBAL MARKETS



MST040D

Lance Leverette  
*Project Analyst*

ISBN:



**BCC Research**  
49 Walnut Park, Building 2  
Wellesley, MA 02481 USA  
866-285-7215 (toll-free within the USA),  
or (+1) 781-489-7301  
[www.bccresearch.com](http://www.bccresearch.com)  
[information@bccresearch.com](mailto:information@bccresearch.com)

## TABLE OF CONTENTS

TOPIC	PAGE NO.
CHAPTER 1 INTRODUCTION	2
STUDY GOALS AND OBJECTIVES	2
REASONS FOR DOING THIS STUDY	2
INTENDED AUDIENCE	3
SCOPE OF REPORT	3
INFORMATION SOURCES	3
METHODOLOGY	3
ANALYST'S CREDENTIALS	4
RELATED BCC RESEARCH REPORTS	4
BCC RESEARCH WEBSITE	4
DISCLAIMER	5
CHAPTER 2 SUMMARY	7
<i>SUMMARY TABLE GLOBAL MARKET FOR ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	9
<i>SUMMARY FIGURE GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (\$ MILLIONS)</i>	9
CHAPTER 3 OVERVIEW	11
BRIEF HISTORY	11
FUNDAMENTALS OF ELECTROPHORESIS	11
ELECTROPHORESIS OR ZONE ELECTROPHORESIS	12
ISOTACHOPHORESIS	12
ISOELECTRIC FOCUSING (IEF)	12
ELECTROPHORESIS APPARATUS	13
GE APPARATUS SYSTEM	13
Horizontal GE System	13
Vertical Gel Systems	14
Slab Gel Systems	14
Tube Gel Systems	14
CE APPARATUS	14
GE BUFFERS	15
<i>TABLE 1 DETERGENT ADDITIVES USED IN ELECTROPHORESIS</i>	16
BUFFERS FOR CE	16
VISUALIZATION METHODS	16
APPLICATIONS OF ELECTROPHORESIS	17
NUCLEIC ACID ELECTROPHORESIS	17
PROTEIN ELECTROPHORESIS	17
CHAPTER 4 TECHNOLOGY	20
BRIEF REVIEW OF RECENT TECHNOLOGY DEVELOPMENTS	20
ALTERNATIVES TO GE	20
3D Electrophoresis	20
Novel 2DGE Method for Protein Analysis	20
Iron and Gold Nanoparticles Challenge Traditional GE and Ion Chromatography	21

<b>TOPIC</b>	<b>PAGE NO.</b>
RAPID DNA ELECTROPHORETIC SEPARATION METHOD	21
FOURIER TRANSFORM CAPILLARY ELECTROPHORESIS	22
HORIZONTAL POLYACRYLAMIDE GELS USING PLEXIGLAS APPARATUS[3]	22
<i>TABLE 2 BENEFITS OF USING PLEXIGLASS APPARATUS</i>	22
MINIATURIZATION REVITALIZING CE	23
MATHEMATICAL RELATIONSHIP MODEL TO DESIGN POLYMER GELS FOR IMPROVED ANALYTE SEPARATION	23
COMPLEX BIOLOGICAL ANALYTE SEPARATION WITH A FRESH PERSPECTIVE[5]	24
CAPILLARY ISOELECTRIC FOCUSING (CIEF) FOR STUDYING CELLULAR MICROORGANISMS	24
A NOVEL CE TECHNOLOGY PLATFORM	25
CHAPTER 5 MARKETS BY ELECTROPHORESIS TECHNOLOGY	27
CLASSIFICATION OF ELECTROPHORESIS TECHNOLOGIES	27
GEL ELECTROPHORESIS	27
The Electrophoresis Matrix	27
Agarose Gel Matrix	27
Polyacrylamide Gel Matrix	27
Native and SDS-PAGE	28
<i>TABLE 3 MAJOR USER APPLICATIONS OF SDS PAGE TECHNIQUE</i>	29
Two-Dimensional Gel Electrophoresis (2DGE)	29
<i>TABLE 4 BENEFITS AND LIMITATIONS OF COMMONLY USED DYES</i>	30
CAPILLARY ELECTROPHORESIS	30
Capillary Zone Electrophoresis (CZE)	30
Capillary Gel Electrophoresis (CGE)	30
Micellar Electrokinetic Chromatography (MEKC)	31
IEF	31
Capillary Electro Chromatography (CEC)	31
Capillary Isotachophoresis (ITP)	31
<i>TABLE 5 SEPARATION MECHANISM AND APPLICATIONS OF MODES OF CE</i>	31
<i>TABLE 6 BENEFITS OF ELECTROCHEMICAL DETECTION</i>	33
GLOBAL ELECTROPHORESIS TECHNOLOGY MARKET OVERVIEW	33
SCOPE AND SEGMENTATION	34
ELECTROPHORESIS TECHNOLOGY CHALLENGES	35
EXPANSION OF RESEARCH PURSUITS CHALLENGES THE INFORMATICS PRODUCT SEGMENT	35
NEED FOR REPRODUCIBILITY: A MAJOR CHALLENGE TO BOTH GE AND CE	35
NEED FOR HIGHER THROUGHPUT ANALYTICAL ASSAYS CONFINES MARKET POTENTIAL	35
LOW EXPRESSION PROTEINS AUGMENT DIFFICULTY LEVELS IN ANALYSIS POSTELECTROPHORETIC SEPARATION	35
NONUNIFORMITY IN STAINING PROCEDURES IMPACTS QUANTITATIVE PROTEIN EXPRESSION ANALYSIS	36
<i>TABLE 7 CHALLENGES OF MAJOR ELECTROPHORESIS TECHNOLOGY</i>	36
REVENUE FORECAST BY TECHNOLOGY SEGMENTS	36
<i>TABLE 8 GLOBAL MARKET FOR ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	36

<b>TOPIC</b>	<b>PAGE NO.</b>
<i>FIGURE 1 GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (\$ MILLIONS)</i>	36
<i>TABLE 9 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (%)</i>	37
<i>FIGURE 2 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (%)</i>	37
CE TECHNOLOGY REVENUE FORECAST	38
GE TECHNOLOGY REVENUE FORECAST	39
<i>TABLE 10 GLOBAL MARKET FOR GEL ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)</i>	40
<i>FIGURE 3 GLOBAL MARKET TRENDS FOR GEL ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (\$ MILLIONS)</i>	40
<i>TABLE 11 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (%)</i>	40
<i>FIGURE 4 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (%)</i>	41
GLOBAL REVENUE FORECAST FOR GE BY PRODUCT SEGMENTS	42
<i>TABLE 12 GLOBAL MARKET FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (\$ MILLIONS)</i>	42
<i>FIGURE 5 GLOBAL MARKET TRENDS FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, 2014-2020 (\$ MILLIONS)</i>	42
<i>TABLE 13 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (%)</i>	43
<i>FIGURE 6 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, 2014-2020 (%)</i>	43
GLOBAL MARKET FORECAST FOR PAGE TECHNOLOGY BY APPLICATION	45
<i>TABLE 14 GLOBAL MARKET FOR PAGE TECHNOLOGY BY APPLICATION, THROUGH 2020 (\$ MILLIONS)</i>	45
<i>FIGURE 7 GLOBAL MARKET TRENDS FOR PAGE TECHNOLOGY BY APPLICATION, 2014-2020 (\$ MILLIONS)</i>	45
<i>TABLE 15 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY APPLICATION, THROUGH 2020 (%)</i>	46
<i>FIGURE 8 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY APPLICATION, 2014-2020 (%)</i>	46
GLOBAL ELECTROPHORESIS MARKET FORECAST BY GEOGRAPHICAL SEGMENT	47
<i>TABLE 16 GLOBAL MARKET FOR ELECTROPHORESIS BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	47
<i>FIGURE 9 GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY REGION, 2014-2020 (\$ MILLIONS)</i>	47
<i>TABLE 17 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY REGION, THROUGH 2020 (%)</i>	48
<i>FIGURE 10 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY REGION, 2014-2020 (%)</i>	48
<i>TABLE 18 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	48
<i>FIGURE 11 GLOBAL MARKET TRENDS FOR CAPILLARY ELECTROPHORESIS BY REGION, 2014-2020 (\$ MILLIONS)</i>	49
<i>TABLE 19 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY REGION, THROUGH 2020 (\$ MILLIONS)</i>	49
<i>FIGURE 12 GLOBAL MARKET TRENDS FOR CAPILLARY ELECTROPHORESIS BY REGION, 2014-2020 (\$ MILLIONS)</i>	49

<b>TOPIC</b>	<b>PAGE NO.</b>
CHAPTER 6 MARKETS BY PRODUCT SEGMENT	53
ELECTROPHORESIS INSTRUMENTATION MARKET	53
INSTRUMENTATION MARKET OVERVIEW	53
<i>TABLE 20 GLOBAL MARKET FOR ELECTROPHORESIS BY INSTRUMENTATION SEGMENTS, THROUGH 2020 (\$ MILLIONS)</i>	55
<i>FIGURE 13 GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY INSTRUMENTATION SEGMENT, 2014-2020 (\$ MILLIONS)</i>	55
MARKET DRIVERS	55
CGE Making Inroads into Slab Gel Market Shares	55
Protein Biomarker Discovery: A Major Impetus for Continued Demand of 2D Electrophoresis Instruments	56
Shift from Genomics-Related Research toward Proteomics Research Creates Sustained Demand for Electrophoresis Instruments	56
Need for High-Performance CE Instruments	56
Miniaturization and Lab-on-a-Chip Technologies in Electrophoresis Offer Enhanced Separation Efficiencies	57
<i>TABLE 21 MARKET DRIVERS FOR ELECTROPHORESIS INSTRUMENTATION</i>	57
MARKET INHIBITORS	57
Alternative Technologies Might Pose a Threat to Electrophoresis Instruments	57
Decline in Repeat Instrument Purchases due to Ruggedness of Instruments	58
<i>TABLE 22 MARKET INHIBITORS FOR ELECTROPHORESIS INSTRUMENTATION</i>	58
INSTRUMENTATION MARKET TRENDS	58
PRODUCT ANALYSIS	59
<i>TABLE 23 PRODUCT PORTFOLIO FOR GEL ELECTROPHORESIS INSTRUMENTS</i>	60
<i>TABLE 24 PRODUCT PORTFOLIO FOR CAPILLARY ELECTROPHORESIS INSTRUMENTS</i>	62
ELECTROPHORESIS SUPPLIES/REAGENTS MARKET	62
OVERVIEW	62
MARKET DRIVERS	64
Proteomics Research Creating Continuous Demand for GE Reagents	64
Introduction of New Dye Stains Using 2D DIGE Technology Holds Promising Protein Detection Capabilities	64
<i>TABLE 25 MARKET DRIVERS FOR ELECTROPHORESIS REAGENTS/SUPPLIES MARKET</i>	64
MARKET INHIBITORS	64
Increased Competition Forcing Suppliers to Trim Costs for Various Dyes	64
Rising Popularity of Nongel-Based Techniques Weaken Growth Prospects of the Reagents Segment	65
Nonradiographic Techniques Weaken the Growth Potential for Visualization Reagents	65
<i>TABLE 26 MARKET INHIBITORS FOR ELECTROPHORESIS REAGENTS/SUPPLIES MARKET</i>	65
GLOBAL MARKET FORECAST BY GELS	65
<i>TABLE 27 GLOBAL MARKET FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, THROUGH 2020 (\$ MILLIONS)</i>	66
<i>FIGURE 14 GLOBAL MARKET TRENDS FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, 2014-2020 (\$ MILLIONS)</i>	66
<i>TABLE 28 GLOBAL MARKET SHARE FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, THROUGH 2020 (%)</i>	67

TOPIC	PAGE NO.
<i>FIGURE 15 GLOBAL MARKET SHARE FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, 2014-2020 (%)</i>	67
PRODUCT ANALYSIS OF ELECTROPHORESIS AFTERMARKET SUPPLIES	67
Gel Electrophoresis Aftermarket Supplies	67
Precast Gels	68
<i>TABLE 29 MAJOR SUPPLIERS OF PRECAST GELS</i>	68
Protein Standards	68
1D Imaging Reagents	69
CE AFTERMARKET PRODUCT ANALYSIS	69
Capillaries	69
ELECTROPHORESIS IMAGING SYSTEMS AND INFORMATICS MARKET	70
OVERVIEW	70
MARKET DRIVERS	71
Demand for Protein Signal Detection Systems as Proteomics Receives Heightened Appreciation in Life Sciences Research	71
Research Experiments Stimulate the Demand for Effective Software Analysis Products	71
Nonfilm-Based Technologies Supplanting Traditional Film-Based Imaging	72
Progress in Complementary Technologies Demanding Heightened Accuracy in Postelectrophoretic Data Analysis	72
<i>TABLE 30 MARKET DRIVERS FOR GEL IMAGING/GEL INFORMATICS SEGMENT</i>	72
MARKET INHIBITORS	72
Costs of Visualization and Informatics Packages Deter Purchasing Decisions	72
Researchers Are Likely to Remain Late Adopters of New Digital Imaging Modalities due to a Resistance to Shift from Traditional Methods	73
Homebrew Analysis Packages Might Pose a Minor Threat to Commercially Available Software Packages	73
<i>TABLE 31 MARKET INHIBITORS FOR GEL IMAGING/GEL INFORMATICS SEGMENT</i>	73
GEL IMAGING/INFORMATICS AND CE DETECTION SYSTEMS PRODUCT ANALYSIS	74
<i>TABLE 32 PRODUCT ANALYSIS FOR GEL IMAGING/GEL INFORMATICS AND CE DETECTION SEGMENTS</i>	74
MARKET FORECAST BY PRODUCT SEGMENTS FOR PROTEIN GEL ELECTROPHORESIS	76
<i>TABLE 33 GLOBAL MARKET FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, THROUGH 2020 (\$ MILLIONS)</i>	76
<i>FIGURE 16 GLOBAL MARKET TRENDS FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, 2014-2020 (\$ MILLIONS)</i>	76
<i>TABLE 34 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, THROUGH 2020 (%)</i>	77
<i>FIGURE 17 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, 2014-2020 (%)</i>	77
PROTEIN GEL ELECTROPHORESIS REAGENTS MARKET	77
PROTEIN GEL ELECTROPHORESIS INSTRUMENTATION MARKET	78
PROTEIN GEL IMAGING AND INFORMATICS REVENUE FORECAST	78
CAPILLARY ELECTROPHORESIS MARKET FORECAST BY PRODUCT SEGMENTS	79
<i>TABLE 35 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (\$ MILLIONS)</i>	79

<b>TOPIC</b>	<b>PAGE NO.</b>
<i>FIGURE 18 GLOBAL MARKET TRENDS FOR CE BY PRODUCT SEGMENTS, 2014-2020 (\$ MILLIONS)</i>	79
<i>TABLE 36 GLOBAL MARKET SHARE FOR CAPILLARY ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (%)</i>	80
<i>FIGURE 19 GLOBAL MARKET SHARE FOR CE BY PRODUCT SEGMENTS, 2014-2020 (%)</i>	80
<i>TABLE 37 LIST OF POLYMER MATRICES USED IN CGE</i>	82
CHAPTER 7 MARKETS BY INDUSTRY APPLICATIONS	84
CE AND THE BIOPHARMACEUTICAL INDUSTRY	84
<i>TABLE 38 APPLICATIONS OF CE SDS IN THE PHARMACEUTICAL INDUSTRY</i>	85
GENERAL APPLICATIONS OF ELECTROPHORESIS IN BIOLOGICAL APPLICATIONS	86
HEMOGLOBIN ELECTROPHORESIS	86
RELIABLE MEASUREMENT OF TESTOSTERONE LEVELS USING MEKC	86
CE MICROCHIP-BASED DIAGNOSTICS	87
NOVEL POLYMER MATRIX USING GOLD NANOPARTICLES LIKELY TO ENHANCE DNA SEQUENCING	87
MOLECULAR MICROBIAL ECOLOGY APPLICATIONS	88
CE APPLICATIONS IN THE FOOD INDUSTRY	89
CE AND THE ENVIRONMENTAL INDUSTRY	91
CE APPLICATIONS IN THE CHEMICAL INDUSTRY	91
FORENSIC APPLICATIONS OF CE	92
CE MARKET FORECAST BY INDUSTRIAL END USERS	93
<i>TABLE 39 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, THROUGH 2020 (\$ MILLIONS)</i>	93
<i>FIGURE 20 GLOBAL MARKET TRENDS FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (\$ MILLIONS)</i>	94
<i>TABLE 40 GLOBAL MARKET SHARE FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, THROUGH 2020 (%)</i>	94
<i>FIGURE 21 GLOBAL MARKET SHARE FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (%)</i>	94
GLOBAL GE REVENUE FORECAST BY END USERS	97
<i>TABLE 41 GLOBAL MARKET FOR GEL ELECTROPHORESIS END-USER APPLICATIONS, THROUGH 2020 (\$ MILLIONS)</i>	97
<i>FIGURE 22 GLOBAL MARKET TRENDS FOR GEL ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (\$ MILLIONS)</i>	97
<i>TABLE 42 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY END-USER APPLICATIONS, THROUGH 2020 (%)</i>	98
<i>FIGURE 23 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (%)</i>	98
CHAPTER 8 INDUSTRY STRUCTURE AND COMPETITIVE ANALYSIS	102
ELECTROPHORESIS INDUSTRY STRUCTURE	102
GLOBAL COMPETITIVE LANDSCAPE	103
<i>TABLE 43 MAJOR COMPETITIVE FACTORS FOR THE ELECTROPHORESIS MARKET</i>	104
GLOBAL COMPETITIVE STRUCTURE FOR ELECTROPHORESIS INSTRUMENTATION	104
GLOBAL COMPETITIVE STRUCTURE FOR ELECTROPHORESIS REAGENTS/SUPPLIES MARKET	106

<b>TOPIC</b>	<b>PAGE NO.</b>
GLOBAL COMPETITIVE STRUCTURE FOR GEL DOCUMENTATION/GEL INFORMATICS AND CE DETECTION SEGMENT	106
DISTRIBUTION STRUCTURE	108
<i>NOTABLE MERGERS AND ACQUISITIONS IN THE ELECTROPHORESIS INDUSTRY</i>	108
<i>TABLE 44 PARTNERSHIPS/STRATEGIC ALLIANCES IN THE ELECTROPHORESIS INDUSTRY</i>	110
RECENT PRODUCT INTRODUCTIONS	110
<i>TABLE 45 PRODUCT PORTFOLIO FOR ELECTROPHORESIS</i>	114
CHAPTER 9 MARKET SHARE ANALYSIS	117
PAGE MARKET SHARE ANALYSIS	117
PAGE APPARATUS MARKET	117
<i>TABLE 46 VENDOR MARKET SHARE FOR U.S. PAGE APPARATUS, 2016 (%)</i>	117
<i>FIGURE 24 VENDOR MARKET SHARE FOR U.S. PAGE APPARATUS, 2016 (%)</i>	117
PAGE REAGENTS MARKET	118
<i>TABLE 47 VENDOR SHARE MARKET FOR U.S. PAGE REAGENTS, 2016 (%)</i>	118
<i>FIGURE 25 VENDOR SHARE MARKET FOR U.S. PAGE REAGENTS, 2016 (%)</i>	119
GEL IMAGING AND INFORMATICS SEGMENT MARKET SHARE ANALYSIS	119
<i>TABLE 48 VENDOR MARKET SHARE FOR U.S. PAGE GEL IMAGING AND GEL INFORMATICS, 2016 (%)</i>	119
<i>FIGURE 26 VENDOR MARKET SHARE FOR U.S. PAGE GEL IMAGING AND GEL INFORMATICS, 2016 (%)</i>	120
CE MARKET	120
<i>TABLE 49 VENDOR MARKET SHARE FOR U.S. TRADITIONAL CE, 2016 (%)</i>	121
<i>FIGURE 27 VENDOR MARKET SHARE FOR U.S. TRADITIONAL CE, 2016 (%)</i>	121
AGAROSE GEL MEDIA MARKET SHARE ANALYSIS	122
<i>TABLE 50 VENDOR MARKET SHARE FOR U.S. AGAROSE MEDIA, 2016 (%)</i>	122
<i>FIGURE 28 VENDOR MARKET SHARE FOR U.S. AGAROSE MEDIA BY TIER, 2016 (%)</i>	122
<i>TABLE 51 VENDOR MARKET SHARE FOR U.S. NUCLEIC ACID SUBMARINE ELECTROPHORESIS INSTRUMENTATION, 2016 (%)</i>	123
<i>FIGURE 29 VENDOR MARKET SHARE FOR U.S. NUCLEIC ACID SUBMARINE ELECTROPHORESIS INSTRUMENTATION, 2016 (%)</i>	124
CHAPTER 10 COMPANY PROFILES	126
AB SCIEX LLC (FORMERLY BECKMAN COULTER INC.)	126
ADVANCED ANALYTICAL TECHNOLOGIES INC.	126
AGILENT TECHNOLOGIES	127
AMRESCO	128
BIO-RAD LABORATORIES	128
BIOTEC FISCHER GMBH	128
BIOMETRA GMBH	129
DECODON GMBH	129
ELCHROM SCIENTIFIC AG	130
GE HEALTHCARE BIO-SCIENCES	130
THE GEL COMPANY	130
HARVARD BIOSCIENCE	131
HOEFER INC. (DIVISION OF HARVARD BIOSCIENCE)	131
SCIE-PLAS (DIVISION OF HARVARD BIOSCIENCE)	131
HELENA LABORATORIES	132



<b>TOPIC</b>	<b>PAGE NO.</b>
PICOMETRICS TECHNOLOGIES SAS	132
PRINCE TECHNOLOGIES B.V.	133
SEBIA INC.	133
SERVA ELECTROPHORESIS GMBH	134
SIGMA-ALDRICH CORP.	134
SYNGENE	135
THERMO FISHER SCIENTIFIC INC.	135
TOTALLAB LTD.	136
CHAPTER 11 PATENT ANALYSIS	138
<i>FIGURE 30 GLOBAL PATENTS ISSUED FOR ELECTROPHORESIS TECHNOLOGIES, 2013-2016 (NO. OF PATENTS)</i>	138
<i>FIGURE 31 GLOBAL PATENTS ISSUED FOR CAPILLARY ELECTROPHORESIS, 2013-2015 (NO. OF PATENTS)</i>	139
<i>FIGURE 32 GLOBAL PATENTS ISSUED FOR GEL ELECTROPHORESIS TECHNOLOGY, 2013-2015 (NO. OF PATENTS)</i>	139
<i>FIGURE 33 GLOBAL PATENTS ISSUED FOR GENERAL ELECTROPHORESIS (ACCESSORIES, PARTS, ETC.), 2013-2015 (NO. OF PATENTS)</i>	139
<i>FIGURE 34 GLOBAL PATENTS ISSUED FOR ELECTROPHORESIS TECHNOLOGIES BY ASSIGNEE NATIONALITY, 2013-2015 (NO. OF PATENTS)</i>	140

**LIST OF TABLES**

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
SUMMARY TABLE GLOBAL MARKET FOR ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	9
TABLE 1 DETERGENT ADDITIVES USED IN ELECTROPHORESIS	16
TABLE 2 BENEFITS OF USING PLEXIGLASS APPARATUS	22
TABLE 3 MAJOR USER APPLICATIONS OF SDS PAGE TECHNIQUE	29
TABLE 4 BENEFITS AND LIMITATIONS OF COMMONLY USED DYES	30
TABLE 5 SEPARATION MECHANISM AND APPLICATIONS OF MODES OF CE	31
TABLE 6 BENEFITS OF ELECTROCHEMICAL DETECTION	33
TABLE 7 CHALLENGES OF MAJOR ELECTROPHORESIS TECHNOLOGY	36
TABLE 8 GLOBAL MARKET FOR ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	36
TABLE 9 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (%)	37
TABLE 10 GLOBAL MARKET FOR GEL ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (\$ MILLIONS)	40
TABLE 11 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY TECHNOLOGY, THROUGH 2020 (%)	40
TABLE 12 GLOBAL MARKET FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (\$ MILLIONS)	42
TABLE 13 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (%)	43
TABLE 14 GLOBAL MARKET FOR PAGE TECHNOLOGY BY APPLICATION, THROUGH 2020 (\$ MILLIONS)	45
TABLE 15 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY APPLICATION, THROUGH 2020 (%)	46
TABLE 16 GLOBAL MARKET FOR ELECTROPHORESIS BY REGION, THROUGH 2020 (\$ MILLIONS)	47
TABLE 17 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY REGION, THROUGH 2020 (%)	48
TABLE 18 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY REGION, THROUGH 2020 (\$ MILLIONS)	48
TABLE 19 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY REGION, THROUGH 2020 (\$ MILLIONS)	49
TABLE 20 GLOBAL MARKET FOR ELECTROPHORESIS BY INSTRUMENTATION SEGMENTS, THROUGH 2020 (\$ MILLIONS)	55
TABLE 21 MARKET DRIVERS FOR ELECTROPHORESIS INSTRUMENTATION	57
TABLE 22 MARKET INHIBITORS FOR ELECTROPHORESIS INSTRUMENTATION	58
TABLE 23 PRODUCT PORTFOLIO FOR GEL ELECTROPHORESIS INSTRUMENTS	60
TABLE 24 PRODUCT PORTFOLIO FOR CAPILLARY ELECTROPHORESIS INSTRUMENTS	62
TABLE 25 MARKET DRIVERS FOR ELECTROPHORESIS REAGENTS/SUPPLIES MARKET	64
TABLE 26 MARKET INHIBITORS FOR ELECTROPHORESIS REAGENTS/SUPPLIES MARKET	65
TABLE 27 GLOBAL MARKET FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, THROUGH 2020 (\$ MILLIONS)	66
TABLE 28 GLOBAL MARKET SHARE FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, THROUGH 2020 (%)	67
TABLE 29 MAJOR SUPPLIERS OF PRECAST GELS	68
TABLE 30 MARKET DRIVERS FOR GEL IMAGING/GEL INFORMATICS SEGMENT	72
TABLE 31 MARKET INHIBITORS FOR GEL IMAGING/GEL INFORMATICS SEGMENT	73

<b>TABLE HEADING</b>	<b>PAGE NO.</b>
TABLE 32 PRODUCT ANALYSIS FOR GEL IMAGING/GEL INFORMATICS AND CE DETECTION SEGMENTS	74
TABLE 33 GLOBAL MARKET FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, THROUGH 2020 (\$ MILLIONS)	76
TABLE 34 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, THROUGH 2020 (%)	77
TABLE 35 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (\$ MILLIONS)	79
TABLE 36 GLOBAL MARKET SHARE FOR CAPILLARY ELECTROPHORESIS BY PRODUCT SEGMENTS, THROUGH 2020 (%)	80
TABLE 37 LIST OF POLYMER MATRICES USED IN CGE	82
TABLE 38 APPLICATIONS OF CE SDS IN THE PHARMACEUTICAL INDUSTRY	85
TABLE 39 GLOBAL MARKET FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, THROUGH 2020 (\$ MILLIONS)	93
TABLE 40 GLOBAL MARKET SHARE FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, THROUGH 2020 (%)	94
TABLE 41 GLOBAL MARKET FOR GEL ELECTROPHORESIS END-USER APPLICATIONS, THROUGH 2020 (\$ MILLIONS)	97
TABLE 42 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY END-USER APPLICATIONS, THROUGH 2020 (%)	98
TABLE 43 MAJOR COMPETITIVE FACTORS FOR THE ELECTROPHORESIS MARKET	104
TABLE 44 PARTNERSHIPS/STRATEGIC ALLIANCES IN THE ELECTROPHORESIS INDUSTRY	110
TABLE 45 PRODUCT PORTFOLIO FOR ELECTROPHORESIS	114
TABLE 46 VENDOR MARKET SHARE FOR U.S. PAGE APPARATUS, 2016 (%)	117
TABLE 47 VENDOR SHARE MARKET FOR U.S. PAGE REAGENTS, 2016 (%)	118
TABLE 48 VENDOR MARKET SHARE FOR U.S. PAGE GEL IMAGING AND GEL INFORMATICS, 2016 (%)	119
TABLE 49 VENDOR MARKET SHARE FOR U.S. TRADITIONAL CE, 2016 (%)	121
TABLE 50 VENDOR MARKET SHARE FOR U.S. AGAROSE MEDIA, 2016 (%)	122
TABLE 51 VENDOR MARKET SHARE FOR U.S. NUCLEIC ACID SUBMARINE ELECTROPHORESIS INSTRUMENTATION, 2016 (%)	123

**LIST OF FIGURES**

<b>FIGURE TITLE</b>	<b>PAGE NO.</b>
SUMMARY FIGURE GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (\$ MILLIONS)	9
FIGURE 1 GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (\$ MILLIONS)	36
FIGURE 2 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (%)	37
FIGURE 3 GLOBAL MARKET TRENDS FOR GEL ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (\$ MILLIONS)	40
FIGURE 4 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY TECHNOLOGY, 2014-2020 (%)	41
FIGURE 5 GLOBAL MARKET TRENDS FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, 2014-2020 (\$ MILLIONS)	42
FIGURE 6 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY PRODUCT SEGMENTS, 2014-2020 (%)	43
FIGURE 7 GLOBAL MARKET TRENDS FOR PAGE TECHNOLOGY BY APPLICATION, 2014-2020 (\$ MILLIONS)	45
FIGURE 8 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY APPLICATION, 2014-2020 (%)	46
FIGURE 9 GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY REGION, 2014-2020 (\$ MILLIONS)	47
FIGURE 10 GLOBAL MARKET SHARE FOR ELECTROPHORESIS BY REGION, 2014-2020 (%)	48
FIGURE 11 GLOBAL MARKET TRENDS FOR CAPILLARY ELECTROPHORESIS BY REGION, 2014-2020 (\$ MILLIONS)	49
FIGURE 12 GLOBAL MARKET TRENDS FOR CAPILLARY ELECTROPHORESIS BY REGION, 2014-2020 (\$ MILLIONS)	49
FIGURE 13 GLOBAL MARKET TRENDS FOR ELECTROPHORESIS BY INSTRUMENTATION SEGMENT, 2014-2020 (\$ MILLIONS)	55
FIGURE 14 GLOBAL MARKET TRENDS FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, 2014-2020 (\$ MILLIONS)	66
FIGURE 15 GLOBAL MARKET SHARE FOR GE REAGENTS/AFTERMARKET SUPPLIES BY GELS, 2014-2020 (%)	67
FIGURE 16 GLOBAL MARKET TRENDS FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, 2014-2020 (\$ MILLIONS)	76
FIGURE 17 GLOBAL MARKET SHARE FOR PAGE TECHNOLOGY BY PRODUCT SEGMENTS, 2014-2020 (%)	77
FIGURE 18 GLOBAL MARKET TRENDS FOR CE BY PRODUCT SEGMENTS, 2014-2020 (\$ MILLIONS)	79
FIGURE 19 GLOBAL MARKET SHARE FOR CE BY PRODUCT SEGMENTS, 2014-2020 (%)	80
FIGURE 20 GLOBAL MARKET TRENDS FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (\$ MILLIONS)	94
FIGURE 21 GLOBAL MARKET SHARE FOR CAPILLARY ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (%)	94
FIGURE 22 GLOBAL MARKET TRENDS FOR GEL ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (\$ MILLIONS)	97
FIGURE 23 GLOBAL MARKET SHARE FOR GEL ELECTROPHORESIS BY END-USER APPLICATIONS, 2014-2020 (%)	98
FIGURE 24 VENDOR MARKET SHARE FOR U.S. PAGE APPARATUS, 2016 (%)	117
FIGURE 25 VENDOR SHARE MARKET FOR U.S. PAGE REAGENTS, 2016 (%)	119
FIGURE 26 VENDOR MARKET SHARE FOR U.S. PAGE GEL IMAGING AND GEL INFORMATICS, 2016 (%)	120

---

<b>FIGURE TITLE</b>	<b>PAGE NO.</b>
FIGURE 27 VENDOR MARKET SHARE FOR U.S. TRADITIONAL CE, 2016 (%)	121
FIGURE 28 VENDOR MARKET SHARE FOR U.S. AGAROSE MEDIA BY TIER, 2016 (%)	122
FIGURE 29 VENDOR MARKET SHARE FOR U.S. NUCLEIC ACID SUBMARINE ELECTROPHORESIS INSTRUMENTATION, 2016 (%)	124
FIGURE 30 GLOBAL PATENTS ISSUED FOR ELECTROPHORESIS TECHNOLOGIES, 2013-2016 (NO. OF PATENTS)	138
FIGURE 31 GLOBAL PATENTS ISSUED FOR CAPILLARY ELECTROPHORESIS, 2013-2015 (NO. OF PATENTS)	139
FIGURE 32 GLOBAL PATENTS ISSUED FOR GEL ELECTROPHORESIS TECHNOLOGY, 2013-2015 (NO. OF PATENTS)	139
FIGURE 33 GLOBAL PATENTS ISSUED FOR GENERAL ELECTROPHORESIS (ACCESSORIES, PARTS, ETC.), 2013-2015 (NO. OF PATENTS)	139
FIGURE 34 GLOBAL PATENTS ISSUED FOR ELECTROPHORESIS TECHNOLOGIES BY ASSIGNEE NATIONALITY, 2013-2015 (NO. OF PATENTS)	140