

Analytical, Life Science & Diagnostics Association Industry Market Assessment - Quarterly Review

August 2022

Second Quarter (Q2 2022)



JWST Image of Cartwheel Galaxy

Prepared by
Strategic Directions International, Inc.



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Preface

This issue of the ALDA Industry Market Assessment Quarterly (IMAQ) Review prepared by Strategic Directions International, Inc. (SDi) addresses industry results for the second quarter of 2022 (April to June). As in the reviews presented in previous years, 15 product categories of particular interest to ALDA are addressed, which generally align with certain product categories presented in the **2022 SDi Global Assessment Report**. The base year data in this review are derived from the 2021 market data from the most recent **Global Assessment Report**, and the data for the second quarter stems from our analysis of the financial results of public companies in the space and our internal estimates of private company sales.

The ALDA Board selected SDi to provide industry growth and segmentation data on a quarterly basis as an aid to members for planning and performance measurement purposes based on current industry trends. SDi provides the IMAQ 2 months following the end of each calendar quarter. The next issue covering third quarter results will be published at the end of November.

SDi has been providing consulting and market intelligence to industry participants for 40 years. Together with its sibling organizations within Science and Medicine Group, we offer complete market research support for our clients in the life science, analytical, and diagnostics industries. We are well-positioned to assess industry trends based upon our infrastructure for tracking market developments for both our consulting practice and our various publications including the **2022 SDi Global Assessment Report—The Laboratory Analytical and Life Science Instrumentation Industry**. Forthcoming report topics include a report focusing on the environmental market, and two reports including end-user survey data on HPLC and PCR. SDi also stays on top of industry events with its industry leading newsletter, **IBO (Instrument Business Outlook)**.

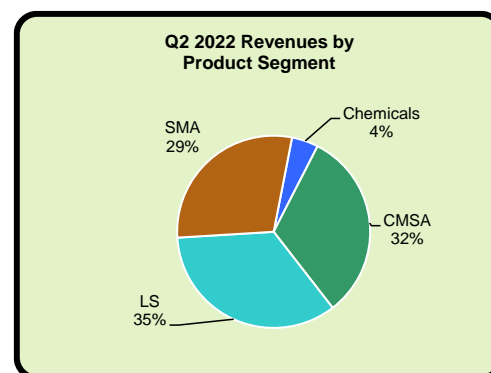
Many of our reports are published for the general industry reader, and in most cases on an annual basis. What differentiates this report is that it is specifically tailored to meet the needs of the ALDA membership. It is designed to present information on a more frequent quarterly timeframe, at a level of detail that is readily available and useful, and that focuses on the 15 technology markets most important to the membership. The aggregate market of these 15 ALDA segments represents about 75–80% of global industry revenues at end-user values. Of course, many ALDA member companies are involved in a number of technology areas, so multiple presentations are included to show the differences in market growth and regional and industrial prospects for those businesses.

PART A. SECOND QUARTER MARKET RESULTS

Q2 Revenues by Product Segment

\$Mil	2022	2021	Growth
Chrom, Mass Spec & Automation (CMSA)	4,953	4,565	8.5%
Spectroscopy and Materials Analysis (SMA)	4,493	4,171	7.7%
Life Science (LS)	5,341	5,272	1.3%
Analytical Chemicals	691	639	8.2%
Total	15,478	14,646	5.7%

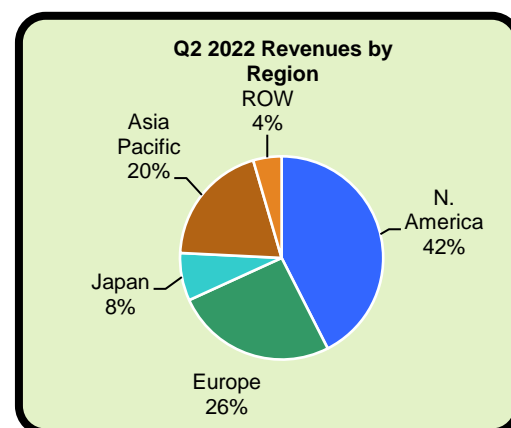
In Q2 2022, growth for these categories is estimated at 5.7%, with total demand topping \$15 billion. Life science is the largest segment, but growth was relatively low. This is primarily due to the decline in RUO products being used in pandemic-related testing and research. This had an effect on PCR, sequencing and nucleic acid prep products in particular. The three other segments all saw growth of about 8%, led by the chromatography, mass spec & automation (CMSA) category, which is also the second largest product segment.



Q2 Revenues by Region

\$Mil	2022	2021	Growth
N. America	6,578	6,052	8.7%
Europe	3,975	3,950	0.6%
Japan	1,176	1,261	-6.7%
Asia Pacific	3,051	2,711	12.5%
ROW	697	673	3.7%
Total	15,478	14,646	5.7%

Asia Pacific, making up one-fifth of all revenues, achieved the strongest growth in Q2 2022 at 12.5%. Fears that Chinese growth would be hampered by severe pandemic lockdowns and transportation issues only partly materialized. Some vendors experienced them, while others reported only slight headwinds. North American growth was also strong, with pharmaceutical and industrial customers driving growth across most technologies. European growth was flat, with currency effects and Russian sanctions providing negative factors that disguised moderate underlying organic growth. Within the ROW segment, Latin America performed better than Africa and the Middle East. The decline of the yen pulled Japanese growth into negative territory.

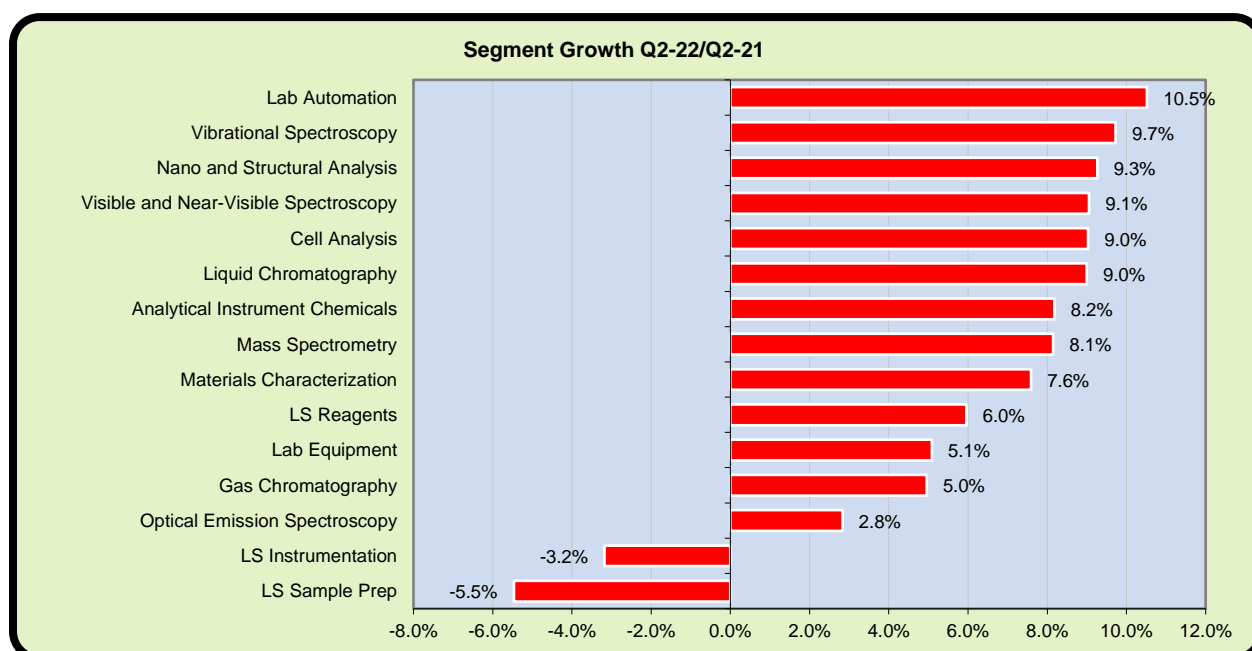


The market defined by ALDA consists of about 50 technology segments grouped into 15 reported segments, and accounts for 75–80% of the worldwide revenues for analytical and life science instrumentation. SDi regularly follows about 25 technology segments not included in the ALDA IMAQ Review, such as surface science techniques, informatics, separation techniques, physical testing, elemental analyzers, and several other technologies.

1. Q2 2022 Revenues by Product

Q2 Revenues by Product

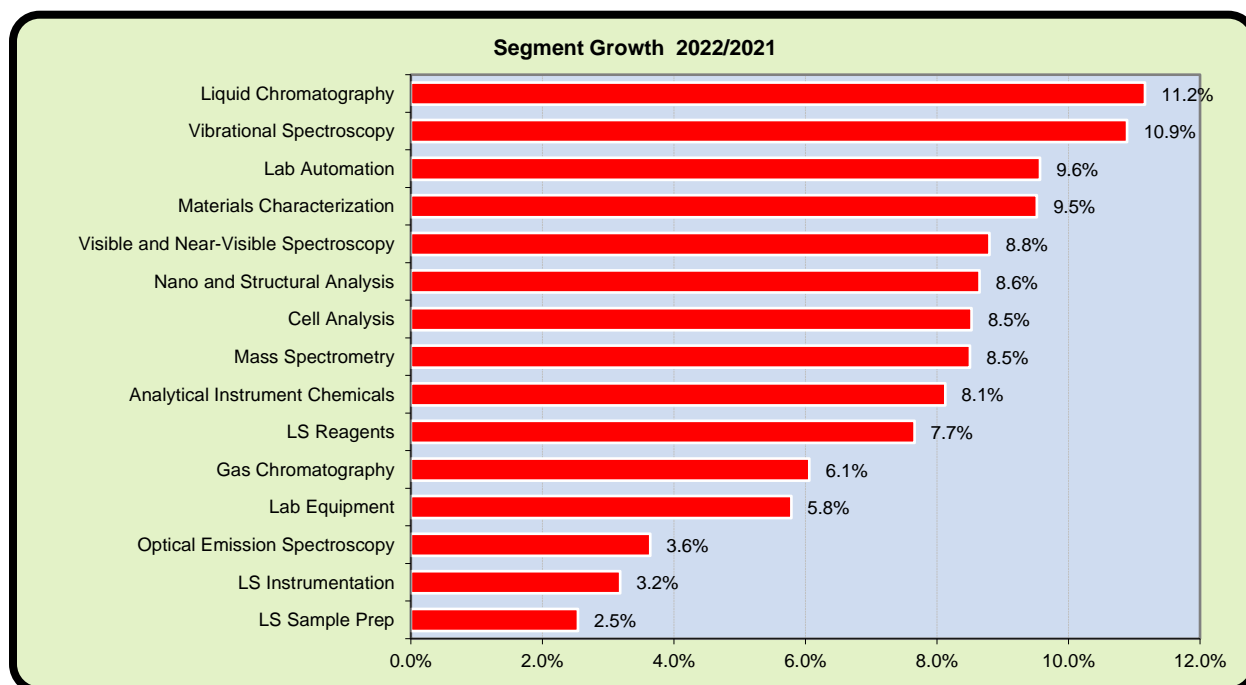
\$Mil	2022	2021	Growth
Spectroscopy and Materials Analysis	4,493	4,171	7.7%
Laboratory Equipment	854	812	5.1%
Materials Characterization	615	572	7.6%
Nano and Structural Analysis	1,662	1,521	9.3%
Optical Emission Spectroscopy	355	345	2.8%
Vibrational Spectroscopy	509	464	9.7%
Visible and Near-Visible Spectroscopy	497	456	9.1%
Chrom, Mass Spec & Automation	4,953	4,565	8.5%
Gas Chromatography	747	712	5.0%
Laboratory Automation	1,184	1,071	10.5%
Liquid Chromatography	1,777	1,630	9.0%
Mass Spectrometry	1,246	1,152	8.1%
Life Science	5,341	5,272	1.3%
Cell Analysis	387	355	9.0%
Life Science Instrumentation	1,188	1,227	-3.2%
Life Science Reagents	2,572	2,427	6.0%
Life Science Sample Prep	1,194	1,262	-5.5%
Analytical Chemicals	691	639	8.2%
Total	15,478	14,646	5.7%



2. 1H 2022 Revenues by Product

First Half Revenues by Product

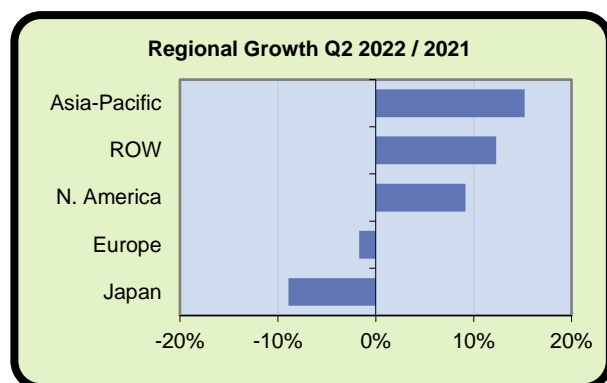
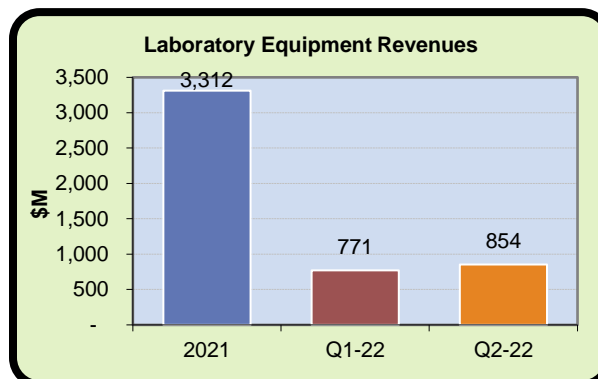
\$Mil	2022	2021	Growth
Spectroscopy and Materials Analysis	8,696	8,046	8.1%
Laboratory Equipment	1,625	1,536	5.8%
Materials Characterization	1,235	1,128	9.5%
Nano and Structural Analysis	3,156	2,905	8.6%
Optical Emission Spectroscopy	694	670	3.6%
Vibrational Spectroscopy	1,018	918	10.9%
Visible and Near-Visible Spectroscopy	967	889	8.8%
Chrom, Mass Spec & Automation	9,616	8,802	9.2%
Gas Chromatography	1,579	1,489	6.1%
Laboratory Automation	2,187	1,996	9.6%
Liquid Chromatography	3,377	3,038	11.2%
Mass Spectrometry	2,473	2,279	8.5%
Life Science	11,423	10,827	5.5%
Cell Analysis	823	758	8.5%
Life Science Instrumentation	2,380	2,307	3.2%
Life Science Reagents	5,480	5,090	7.7%
Life Science Sample Prep	2,740	2,672	2.5%
Analytical Chemicals	1,362	1,259	8.1%
Total	31,096	28,934	7.5%



PART B. LAB EQUIPMENT

Overview

The lab equipment market is comprised of a group of relatively low-cost instruments including: centrifuges, electrochemistry products, and laboratory balances. The market includes initial systems sales, aftermarket purchases and service. Lab equipment saw 5.1% year-over-year growth in Q2 2022 as the market stabilizes from a decline in COVID-19-related product demand.

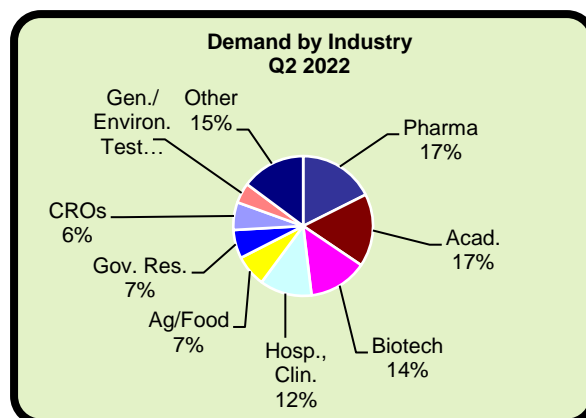


Regional Demand

Regional growth was strongest in Asia Pacific for Q2, with growth of 15.2%. ROW and North America followed with gains of 12.3% and 9.2%, respectively. Asia Pacific growth was bolstered by high demand in China, despite recent lockdowns. While growth was strong in some regions, currency effects for Europe and Japan this quarter caused negative growth rates of -1.7% and -8.9% respectively. Europe's decline was also due in part to pandemic effects and the sanctions on Russia following its invasion of Ukraine.

End-User Markets

While academia makes up approximately close to a fifth of demand for Lab Equipment, its growth is relatively stagnant. Pharma, chemicals, and semiconductors made up the fastest growing end user markets, with pharma now surpassing the academic market in size. While Hospital and clinical labs have increased in importance over the pandemic, growth subsided to about par for the category as a whole in the second quarter, with pandemic-related demand waning during this period.



Market Developments

Eppendorf announced the opening of a new subsidiary in Singapore that will include sales and service activities, a pipette calibration lab, a demo lab, and a Bioprocess Center. PHC Holdings appointed Shoji Miyazaki as CEO. Copia Scientific purchased Atlantic Lab Equipment for an undisclosed amount.

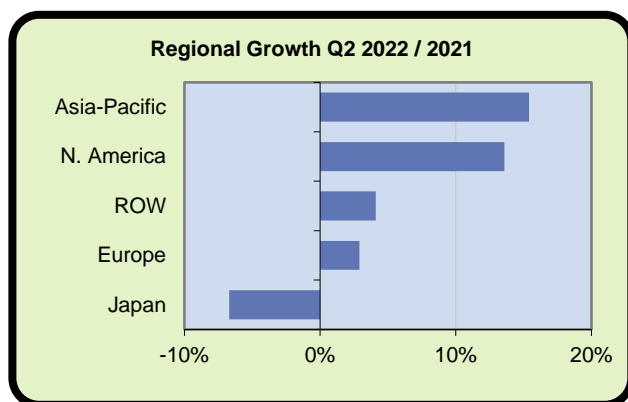
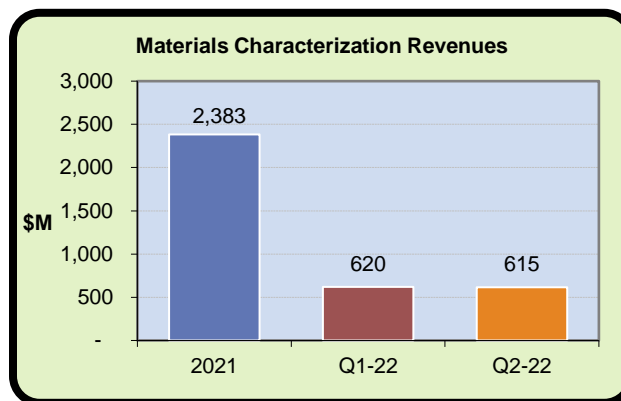
Near Term Prospects

The rise of new variants will likely slow the decline in market demand for COVID-19 diagnostics. While Europe was particularly hit by the Omicron variant, it should see a return to normalcy in the near future, with a slightly hampered recovery due to the continued instability from the invasion of Ukraine.

PART C. MATERIALS CHARACTERIZATION

Overview

The materials characterization market comprises thermal analysis, calorimetry, particle characterization (now including particle counters), and viscometry/rheometry. Revenue estimates encompass initial systems, components, consumables, and service, but exclude small amounts of life science reagents and analytical chemicals. During the second quarter of 2022, demand grew by 7.6% year over year.

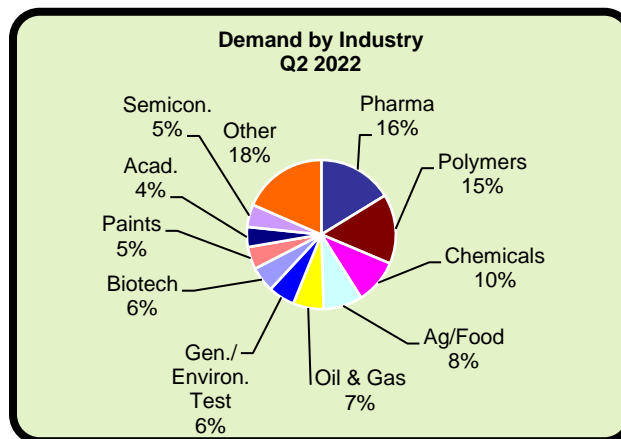


Regional Demand

Asia-Pacific demand saw the greatest growth in the quarter, with strong sales of particle counters and other products into the semiconductor industry. Pharma quality control applications also blossomed in the region. North America also performed strongly, across a broad array of industrial and research markets. ROW and Europe grew modestly in the quarter, while Japanese demand fell precipitately in Q2, despite stronger consumer spending. A weaker yen is the primary culprit.

End-User Markets

Pharmaceutical applications exist for all of these product types and the continued development of and investment in the global pharma industry has now pushed the segment to become the largest individual end market, supplanting polymers and plastics. There are important applications for sensitive calorimetry in R&D stages of the pharma industry, while the other techniques are more suitable for final formulation and quality control testing.



Market Developments

In June, Micromeritics released the AutoChem III chemisorption system for catalyst characterization and the HEL Group introduced the iso-BTC+ calorimeter for isothermal battery performance testing. In August, PerkinElmer announced it would divest its thermal analysis business to New Mountain Capital.

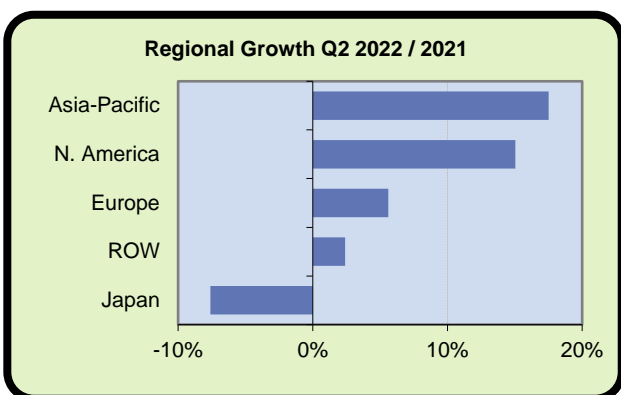
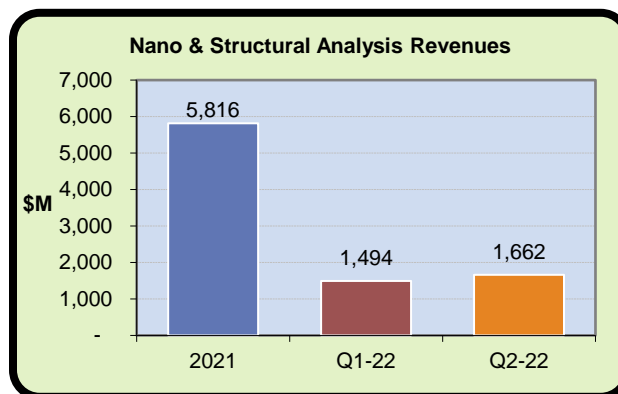
Near Term Prospects

Pharmaceuticals and the broader biopharma sector have become the primary engine of growth for these products. Industrial customers should continue to improve over the latter half of the year, closing the growth gap between them and pharma.

PART D. NANO AND STRUCTURAL ANALYSIS

Overview

The nano and structural analysis market is composed of four segments: nuclear magnetic resonance (NMR), electron microscopy, X-ray diffraction (XRD) and X-ray fluorescence (XRF). Revenue estimates include initial systems, components, consumables, and service, but exclude small amounts of life science reagents and analytical chemicals, which are considered elsewhere. Second quarter revenues grew 9.3%, with electron microscopy continuing to lead in terms of growth.

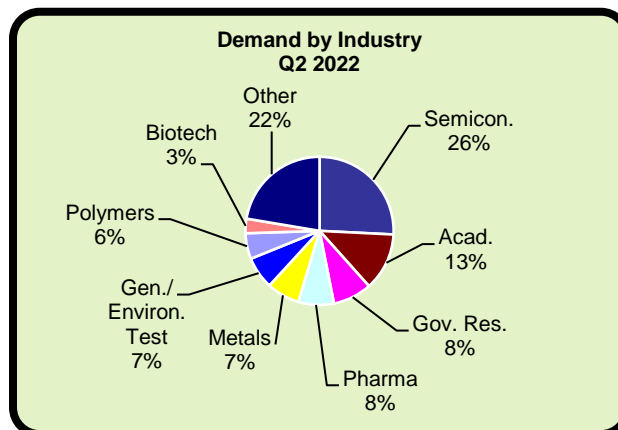


Regional Demand

Semiconductor, electronics and nanotechnology demand was strong in both Asia-Pacific and North America, helping to drive year over year growth into double digits for both regions. Supply chain issues with chips and other high technology products are helping to drive growth globally, as countries hope to develop domestic sources of these products. European demand was organically weak, and further dragged by currency effects, as was Japan.

End-User Markets

Semiconductor demand represented more than a quarter of the total market in Q2. Electron microscopy, XRF, and XRD all have significant applications in this area, for both research and quality control purposes. Solid state NMR has intriguing applications in semiconductors, but it is not a large market for NMR. Academia is the second largest end market for these techniques. NMR is well represented in public research labs, as well as in quality control applications in pharma and food, both growing applications.



Market Developments

In April, at the Experimental Nuclear Magnetic Resonance Conference (ENC 2022), Bruker demonstrated a novel and compact 1.0 GHz NMR magnet, suitable for one-story labs. In June, Bruker introduced the new XFlash 7 detector series for its QUANTAX energy dispersive X-ray spectrometer (EDS) systems. Renishaw launched the inLux SEM Raman interface in August.

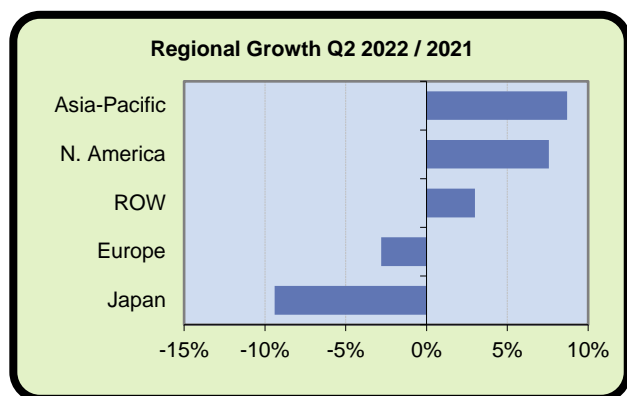
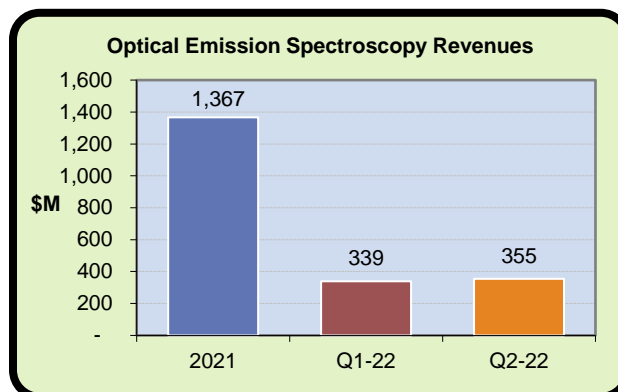
Near Term Prospects

Overall prospects for these markets remain strong, with future growth hovering around the high single digits or low double digits. Electron microscopy should remain the fastest growing specific technique.

PART E. OPTICAL EMISSION SPECTROSCOPY

Overview

The optical emission spectroscopy market comprises atomic absorbance (AA), inductively coupled plasma (ICP) and arc/spark optical emission spectroscopy. Revenue estimates encompass initial systems, components, consumables, and service, but exclude analytical chemicals, which are considered elsewhere. In Q2, total demand grew 2.8% year over year. Despite stronger organic demand from industrial customers, negative currency effects had a large impact.

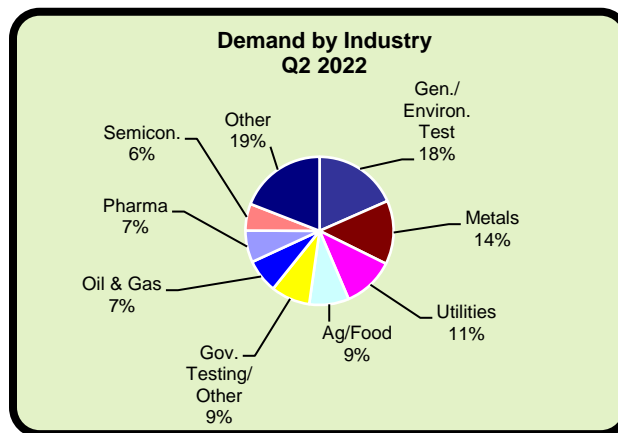


Regional Demand

Despite some pandemic and transportation issues in China, the Asia-Pacific region still produced the most growth for these products, buoyed by environmental and industrial customers throughout the region. North American growth also reached the upper single digits. Many vendors saw a 1%-2% headwind from the Russian invasion of Ukraine, and the weaker euro pulled growth into negative territory for Europe. Japanese spending was relatively stable, but negative currency effects were very strong.

End-User Markets

The food, beverage and agriculture industry had a strong performance in Q2 2022. AA and ICP are both used to detect potential hazards in food, such as arsenic or cadmium in rice. The food industry represents about 9% of total demand for these products, making it the 4th largest industrial segment, surpassing government testing compared to Q1. Environmental testing has long been the largest segment in this market, followed by metals, where the arc/spark technology is uniquely important.



Market Developments

In June, Shimadzu released the space-saving AA-7800 series of AA. In August, PerkinElmer announced it would divest its Applied, Food and Enterprise Services businesses to New Mountain Capital for a total consideration of \$2.45 billion. The divested business includes PerkinElmer's spectroscopy products and will retain the PerkinElmer name.

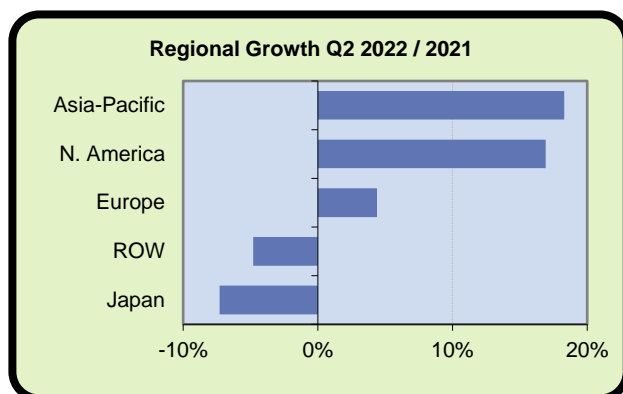
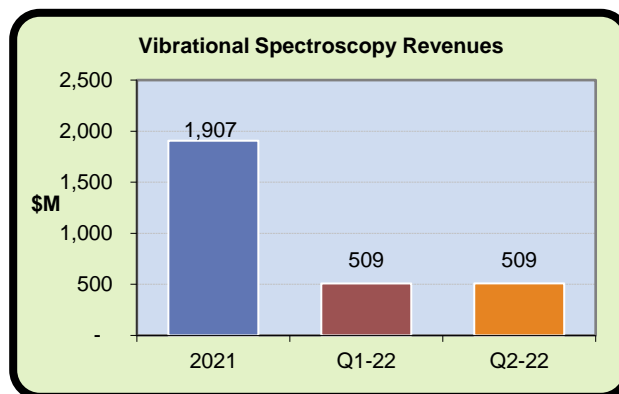
Near Term Prospects

China should stabilize further and help drive Asia-Pacific to remain the fastest growing region. Metals & mining and oil & gas should continue to gather strength, returning to pre-pandemic levels of spend. Most other markets have already largely recovered.

PART F. VIBRATIONAL SPECTROSCOPY

Overview

The vibrational spectroscopy market comprises infra-red, near-infrared (NIR), and Raman spectroscopy, including both conventional and Fourier transform (FT) methods. Revenue estimates encompass initial systems, components, consumables, and service, but exclude analytical chemicals, considered elsewhere. The total market grew 9.7% year over year in Q2 of 2022. Strong growth was experienced in the chemical and semiconductor end markets.

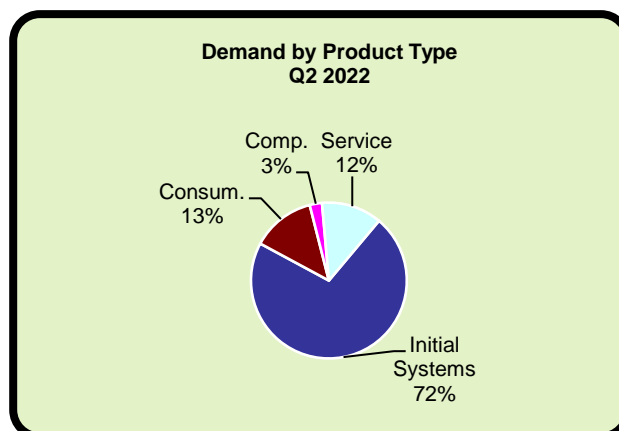


Regional Demand

APAC led the regional growth at high teens driven by environmental and food applications. Growth and economic activity slowed down in China due to lockdowns. A strong pharma/bio sector continued to support North American demand. European markets experienced headwinds from the Russian invasion of Ukraine and negative currency effects. Japan suffered the worst of headwinds as the currency effects were very strong.

Product Segmentation

Initial systems represent the majority of the market as these instruments generally require minimal consumables. Sequential growth was slowed down compared to Q1 due to decline in the demand for COVID related products. Initial systems sales were driven by industrial customers in Q2 with end markets like chemicals and semiconductors experiencing strong demand. Beyond systems, most of the remaining revenue comes from consumables and service, while a small portion of revenue is provided by components.



Market Developments

In July, Agilent Technologies announced that the US FDA has approved a content uniformity (CU) method using the Agilent TRS100 Raman quantitative pharmaceutical analysis system. In August, PerkinElmer announced it would divest its Applied, Food and Enterprise business, including its spectroscopy businesses.

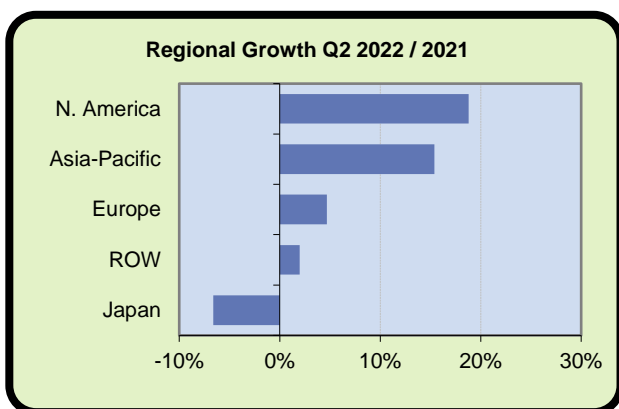
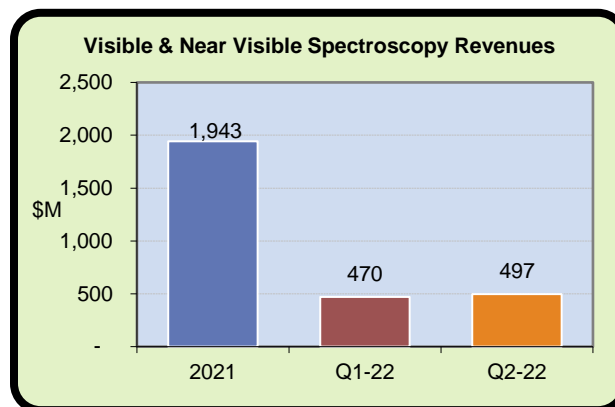
Near Term Prospects

Most end markets have returned to normal and COVID-related products have receded in importance. After some economic shutdowns in Q2, China is expected to ramp up and lead the regional markets in terms of growth. Organic demand from pharma, semiconductors and other industrial end markets will drive growth globally.

PART G. VISIBLE AND NEAR VISIBLE METHODS

Overview

The visible and near-visible methods market comprises UV/Visible spectroscopy, fluorescence, color measurement, ellipsometry, polarimetry, and refractometry. Revenue estimates include initial systems, components, consumables, and service, but exclude life science reagents and analytical chemicals, considered elsewhere. Visible and near visible methods achieved 9.1% year over year growth in Q2 2022 and was led by UV-Vis spectroscopy.

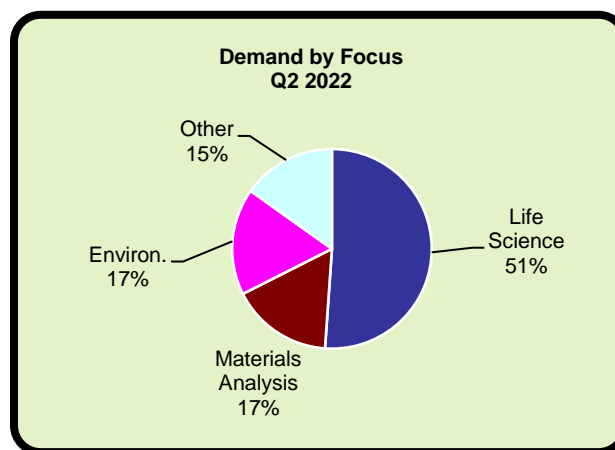


Regional Demand

North America continued to lead the regional markets with strong performance from pharma/bio customers. Despite slowdowns experienced by many vendors in China, the overall growth of APAC was strong in mid-teens driven by ag/food customers. European growth continued to face headwinds in Q2 due to Russian aggression and sanctions. Organic growth was stable in Japan, but was offset by strong negative currency effects.

End-User Markets

Life science applications for these tools made up over half of the total market demand and was the fastest growing segment in Q2. UV/Vis spectroscopy has vital applications in nucleic acid quantification in life science research. Materials analysis and environmental applications each made up about one-sixth of the Q2 demand. UV/Vis again is important for water testing and other environmental applications, while ellipsometry and color measurements have quality control applications in materials analysis.



Market Developments

In June, X-Rite and Pantone announced the eXact 2, a next-gen noncontact handheld spectrophotometer designed to bring the ink, print and packaging workflow together in one device. In June, Ocean Insight announced an expansion to bolster its Applied Systems business unit, which focuses on developing spectral systems for industries including consumer electronics and scrap recycling.

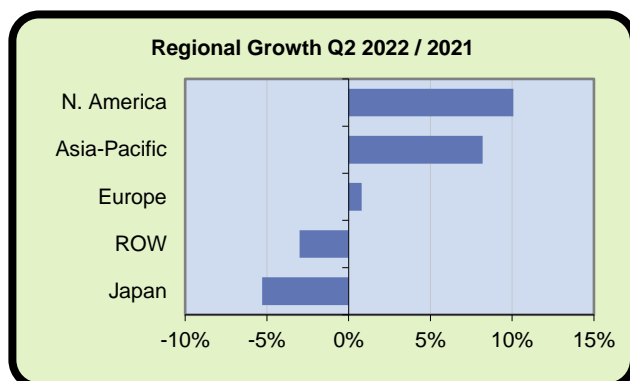
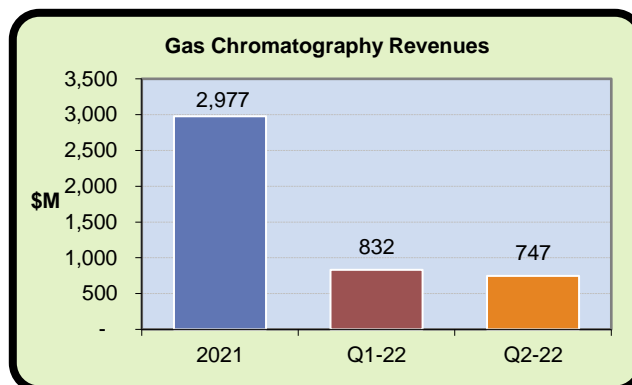
Near Term Prospects

UV-Vis spectroscopy will lead the market with strong support from pharma/bio customers. APAC and North American markets will maintain a strong growth profile while European and Japanese markets recover from the currency effects.

PART H. GAS CHROMATOGRAPHY

Overview

The gas chromatography market comprises not just the chromatographs, but also associated detectors, including mass spectrometry (GC-MS). Revenue estimates encompass initial systems, components, consumables, and service, but exclude analytical chemicals, considered elsewhere. Market demand grew by 5.1% in the second quarter of 2022 compared to last year, driven by increased demand in pharma and environmental testing.

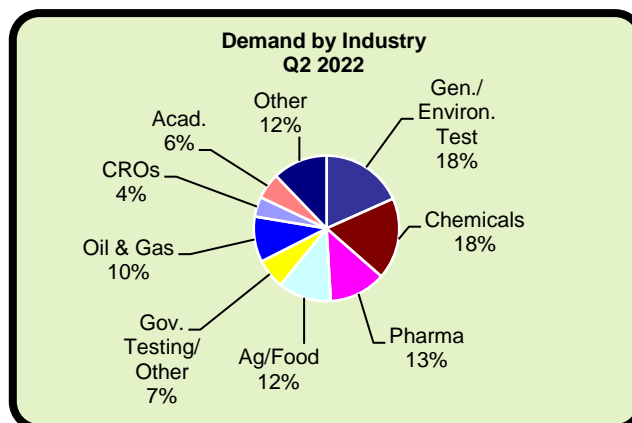


Regional Demand

Growth remained strong in North America and the Asia-Pacific region, driven by sustained pharma and improved environmental demand. High inflation in regions like Japan, Europe and the ROW drove slower growth or market retractions compared to prior years. The exit of the Russia market due to sanctions lowered overall demand by an estimated 1%-2%, affecting European growth. Slow supply chains continued to delay order fulfillment.

End-User Markets

GC and GC/MS are well situated in a number of industries. Chemicals, energy, and pharma had a particularly strong quarter. The strong growth was partially due to delayed orders from last quarter completing this quarter, resulting in above average revenues as vendors recover from some larger COVID related shutdowns in China. Ag/Food and environmental also had modest gains in the quarter, particularly in the US and China.



Market Developments

At ASMS, Agilent launched two new GC/MS triple quads, the 7000E for routine analysis and the 7010C for attogram-level detection. Agilent also acquired Virtual Control, who supplies AI software for GC/MS. In July, Shimadzu launched Peakintelligence, an optional software for triple quadrupole GC-MS/MS. In July, Mestrelab Research, which is majority owned by Bruker, released a new set of automated solutions for GC/MS and LC/MS data workflows.

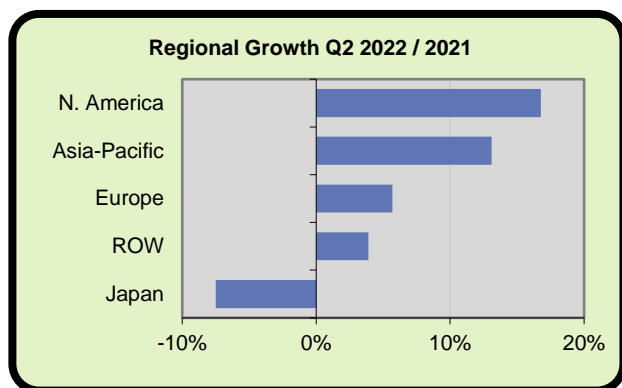
Near Term Prospects

Growth for the third quarter is expected to be in the mid-single digits. Growth will continue to be strong in the Asia-Pacific regional segment and particularly in China. European market growth will remain slow, as the loss of the Russian market will make for a poor comparison with prior quarters. Energy markets are expected to continue to see excellent growth.

PART I. LAB AUTOMATION

Overview

The lab automation market is composed of liquid handlers, robots, microplate readers, and multiplex/high-throughput ELISA systems. Revenue estimates encompass initial systems, components, consumables, and service, but exclude life science reagents, considered elsewhere. Lab automation saw strong growth, increasing 10.5% year-over-year. Liquid handling and multiplex/high throughput ELISA systems contributed significantly to these growth trends.

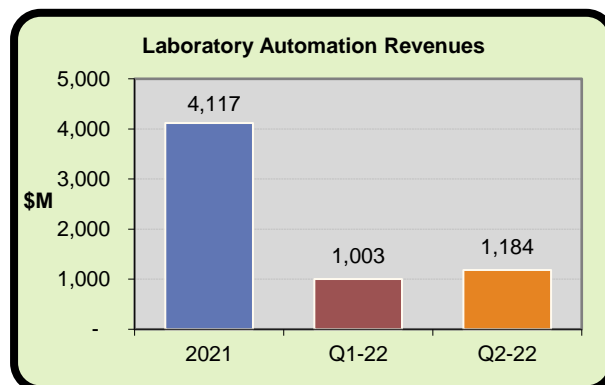


End-User Markets

Automation plays an important role in many sampling and testing applications in life science. The greatest growth came from the pharma/biotech sector. CROs also strengthened demand on biopharma outsourcing. Due to the emergence of new COVID variants, automation is still seeing growth from demand for diagnostic testing and monitoring. The food/agriculture industry also saw strong growth, particularly due to demand from China and the US. Environmental testing got a boost from PFAS testing in the US.

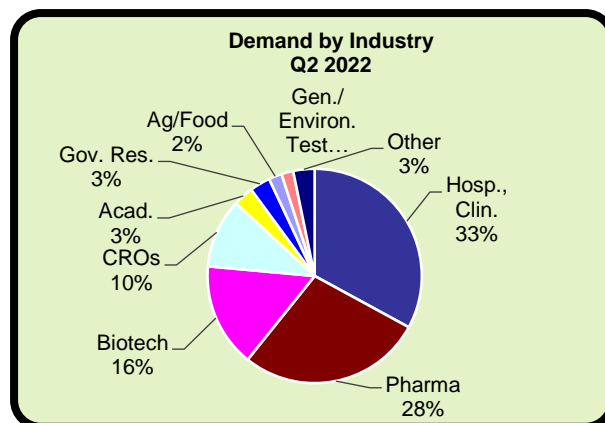
Market Developments

Thermo Fisher Scientific launched a new platform for automated sample prep, and software for chromatography and mass spec. Telescope Automation, a division of the chemical technology company Telescope Innovations, launched its first product in June. Tecan debuted the MagicPrep NGS, an automated benchtop library preparation system.



Regional Demand

Lab automation demand varied significantly across regions in Q2, owing largely to regional differences in COVID-19 recovery and some significant currency effects. North America remained the fastest growing region, growing at a rate of 16.8%. Asia Pacific also saw strong growth of 13.1%, largely driven by demand in China despite lockdowns in the region. Europe's slow recovery from the Omicron variant coupled with sanctions against Russia limited Europe's growth for Q2.



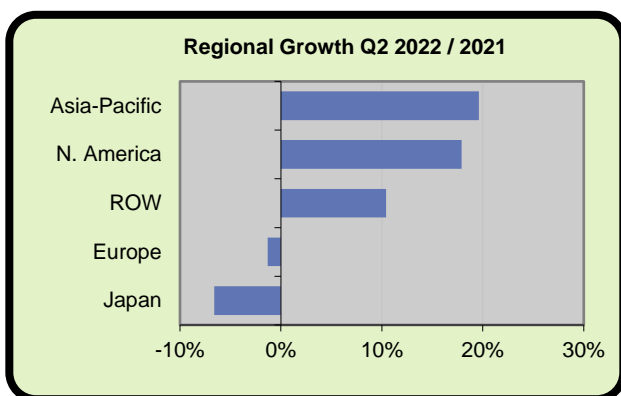
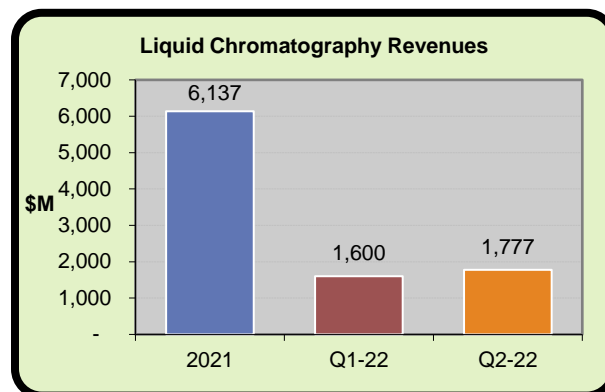
Near Term Prospects

Demand for COVID-related products has leveled off, with the exception of demand for variant detection. The Russian invasion of Ukraine will likely limit Europe's growth in the short term, but other European trends are more favorable. While APAC demand will remain strong, Japan's economy is cooling off and the weaker yen will also limit growth in the near term.

PART J. LIQUID CHROMATOGRAPHY

Overview

The liquid chromatography market comprises HPLC, IC, and LPLC. Revenue estimates encompass initial systems, components, consumables, and service, but exclude analytical chemicals, considered elsewhere. In the second quarter of 2022, demand for liquid chromatography grew by 11.0% compared to the same quarter last year, driven by pharma/bio, food, and environmental applications.

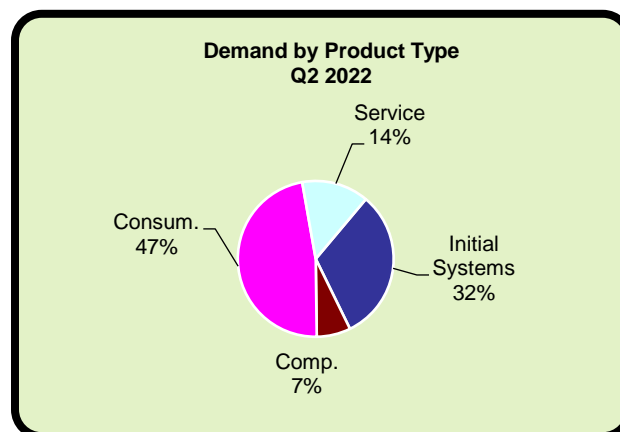


Regional Demand

APAC was the fastest growing region in Q2, led by significant growth in demand from the public sector in India. China saw high single digit growth, despite significant headwinds from COVID-19 lockdowns. North America continues to see excellent growth driven by initial systems replacement. Demand in Japan was completely offset by currency effects. Similarly, Europe was hindered by the conflict between Russia and Ukraine, currency effects, and COVID-19.

Product Segmentation

Across all regions, growth was led by initial systems, with a strong contribution from the pharma/bio sector. Service and consumables in the industrial sector performed well this quarter globally, driven by advanced materials, environmental testing, chemicals, polymers, and semiconductor laboratories. In total, consumables made up nearly half of total demand in the second quarter.



Market Developments

Agilent Technologies acquired Germany-based Polymer Standards Services (PSS). PSS supplies GPC and SEC polymer characterization solutions. Shimadzu recently released a new LC system in its Nexera line of systems.

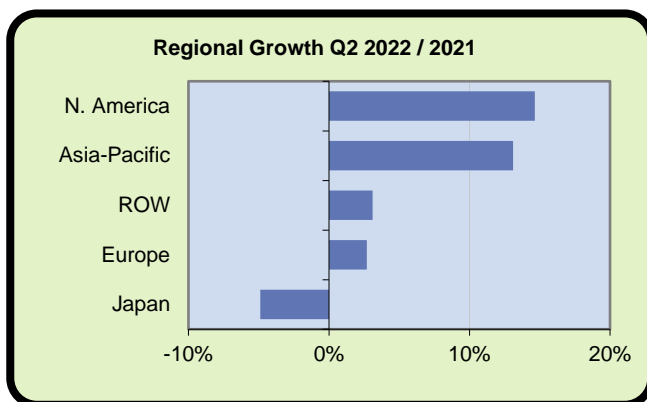
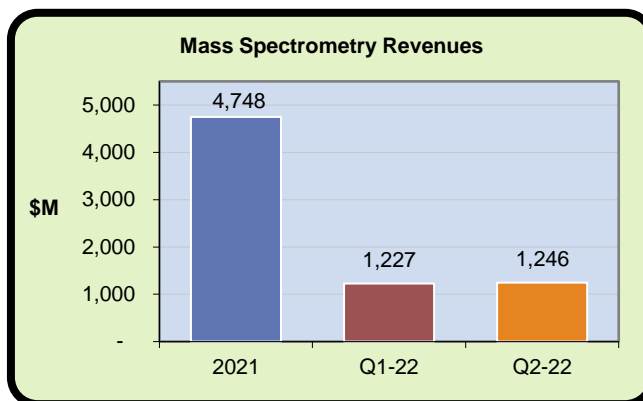
Near Term Prospects

In Q3, geopolitical instability will hinder growth in Europe. A solid order backlog will buoy demand in China in the coming quarters. The US and India will continue to drive growth, led by strength in the pharma/bio, ag/food, and chemical industries.

PART K. MASS SPECTROMETRY

Overview

The mass spectrometry market comprises LC-MS, MALDI-TOF, SIMS, ICP-MS, magnetic sector and FT-MS instrumentation. Revenue estimates encompass initial systems, components, consumables, and service, but exclude analytical chemicals, considered elsewhere. Market demand increased by 8.1% in the first quarter of 2022 year over year, with strong demand for Tandem MS and LC-MS TOF following several new product introductions in the quarter.

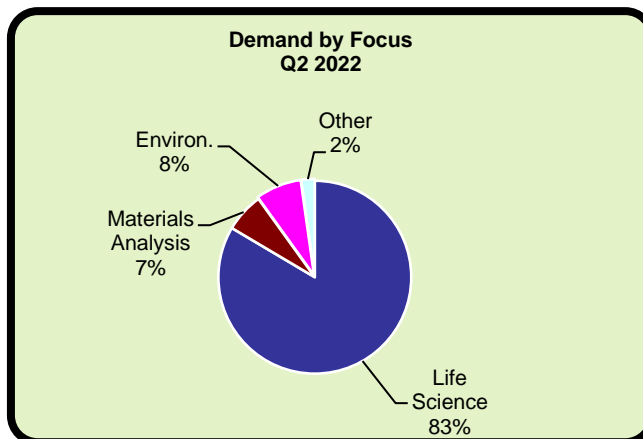


Regional Demand

Growth was strong for North America and the Asia-Pacific region, with currency effects benefiting North America (in contrast to most other regions) and China receiving a fast recovery after COVID-19 shutdowns earlier in the quarter. European growth suffered due to sanctions leading to the effective total loss of the Russian market, as well as inflationary effects. Japan was most affected by monetary effects, suffering a retraction due to poor comparisons to a strong Q2 2021.

End-User Markets

Life science remained a key focus for mass spectrometry instruments. Several product introductions have focused on life science applications, improving throughput and sensitivity for oligo identification and proteomics. New software packages have also benefited the life sciences, with a focus on AI integration and improvements to device integration with sample processing. Materials analysis has seen less growth but still holds a solid portion of demand. Environmental has seen a strong recovery after a pandemic retraction, with tandem MS seeing new life.



Market Developments

ASMS brought a host of new product releases: the Agilent 6475 triple quad for routine quantitation; Bruker's addition to its timsTOF lineup; Shimadzu's iMScope QT imaging mass microscope, which integrates MALDI imaging with an Olympus microscope; Shimadzu's LCMS-2050 single quad, their first new single quad system in over a decade; Waters' Xevo G3 QTOF MS system.

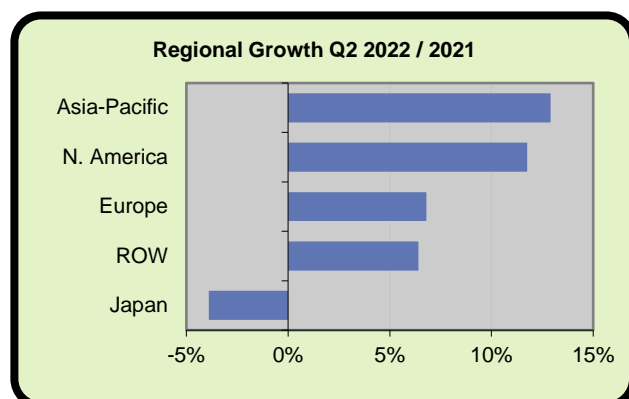
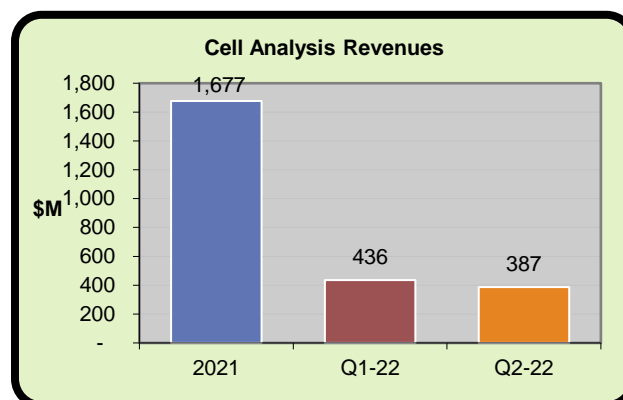
Near Term Prospects

Mass spectrometry is expected to continue to grow at a rapid pace heading into Q3, with a sales boost from a host of new product releases and a booming pharma market. Supply chain issues will cause some order delays, and the European market will see slower growth due to geopolitical events. Other markets like environmental are also expected to maintain strong growth.

PART L. CELL ANALYSIS

Overview

The cell analysis market comprises flow cytometers, transfection, high content screening, and patch clamp systems. Revenue estimates encompass initial systems, components, consumables, and service, but exclude life science reagents, considered elsewhere. Market demand grew by 9.0% in the second quarter driven by flow cytometry and transfection.

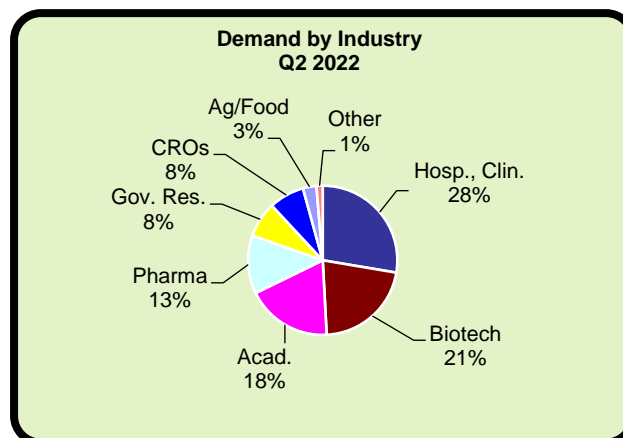


Regional Demand

Asia Pacific led market growth during the second quarter due to strong demand from applied R&D lab functions. Currency effects hindered growth in Europe, Japan, and the Rest of World segment, dragging these regions into lower than average growth, despite robust demand for transfection techniques. North America continues to grow rapidly led by its mature pharma/bio and public sectors.

End-User Markets

The pharma/bio sector is the leading growth engine behind demand for cell analysis products. Flow cytometry and transfection applications within immunoncology, regenerative therapies, and biotechnology R&D contributed to significant growth in Q2. The Hospital and clinical segment represents the single largest end market driven by demand for reagents, dyes, and initial systems.



Market Developments

This quarter, BD Biosciences drove demand through their reagent strategy. The parent company BD also partnered with Labcorp to develop a flow cytometry based diagnostic tool that will connect patients with available treatments. Sartorius announced plans to open a new 10,000 square-meter plant in Tunisia.

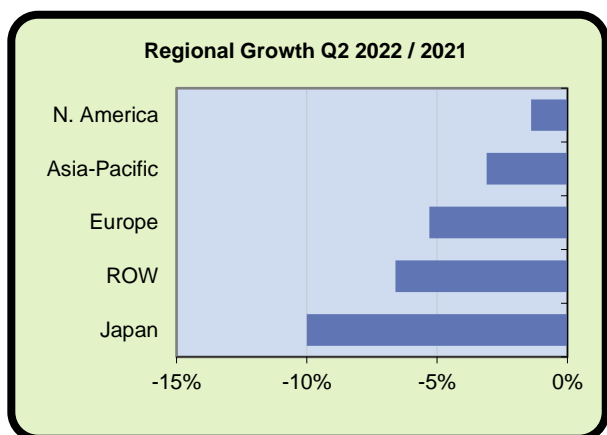
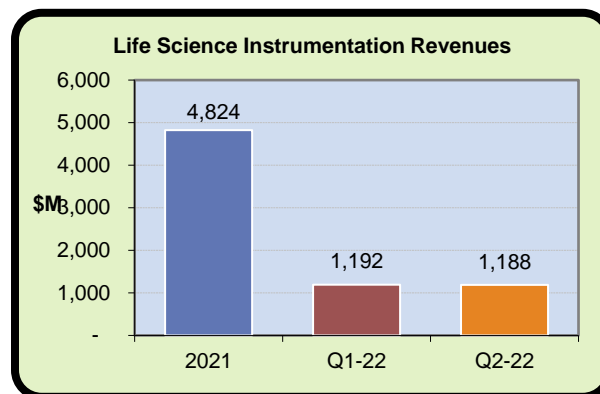
Near Term Prospects

In the third quarter, demand from pharma/bio will continue to drive sales of flow cytometry and transfection instrumentation. Growth in North America will be aided by strength in the pharma and academic lab market. While demand in China and India will be strengthened by consumables and initial systems demand.

PART M. LIFE SCIENCE INSTRUMENTATION

Overview

The life science instrumentation market comprises nucleic acid amplification/PCR, microarrays, sequencers, and electrophoresis hardware. Revenue estimates encompass initial systems, components, consumables, and service, but exclude life science reagents, considered elsewhere. The second quarter of 2022 was challenging, with the market declining by an estimated 3.2% as labs manage their budgets more conservatively, and localized lockdowns impacted demand in China.



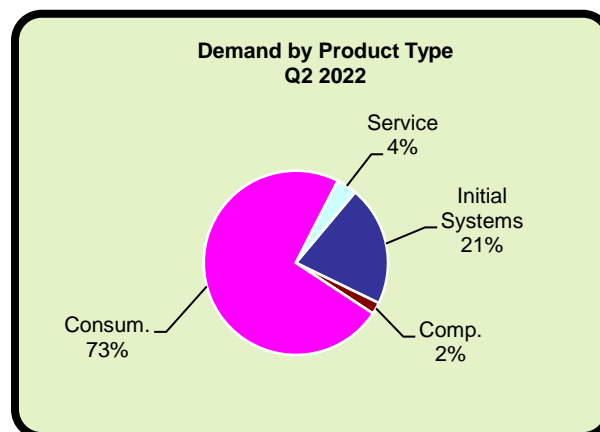
Regional Demand

Demand declined across all regions. Double-digit negative currency effects drove the strongest decline in Japan. With the notable exception of China, demand for instruments and consumables related to COVID diagnostics and surveillance declined, driving down the overall market. The effects of China's lockdowns varied among suppliers, depending on how exposed their supply chains are to movement in China. Some vendors with more exposure were forced to delay order fulfillment and revenue recognition to Q3.

Product Segmentation

Consumables continued to represent the bulk of the market. However, it was consumables that bore the brunt of the reduced demand for COVID-related products this quarter.

Demand for initial systems was flat compared to Q2 2021. Stronger demand for high-throughput systems among pharma/bio labs was offset by weakened demand for lower- and mid-throughput systems among other end markets.



Market Developments

In May, a Delaware District Court jury found that Illumina willfully infringed two patents held by Complete Genomics, a part of MGI Tech/BGI, awarding Complete Genomics \$334 million in damages. This was one of several suits that Illumina and MGI Tech have filed against each other in various jurisdictions.

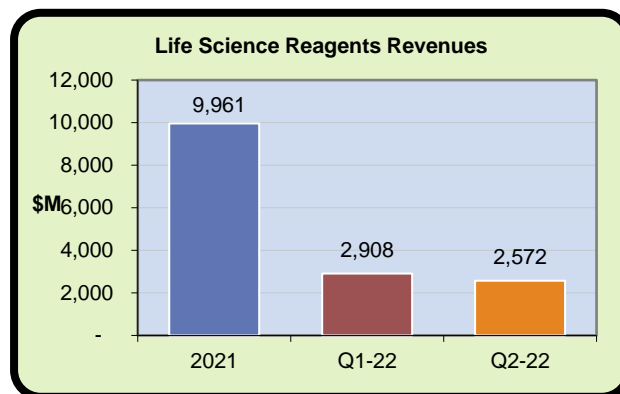
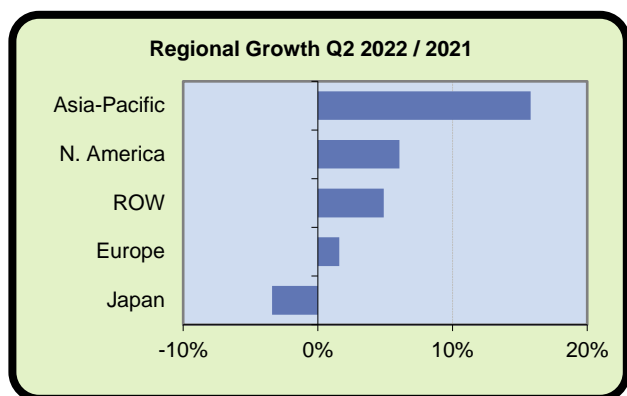
Near Term Prospects

The challenges that impacted the market in Q2 will continue to negatively impact the market in the coming quarters. Demand for COVID-related products will continue to decline, while inflation and the soaring cost of energy in Europe will prompt more budgetary restraint among labs.

PART N. LIFE SCIENCE INSTRUMENT REAGENTS

Overview

Products considered in this section are primarily consumables used with life science instrumentation, cell analysis, and laboratory automation systems. In the second quarter of 2022, demand increased 6.0%. While research applications continue to grow rapidly worldwide, some COVID-related testing is in decline, moderating overall growth. Flow cytometry and related cell analysis products drove significant growth in the quarter.

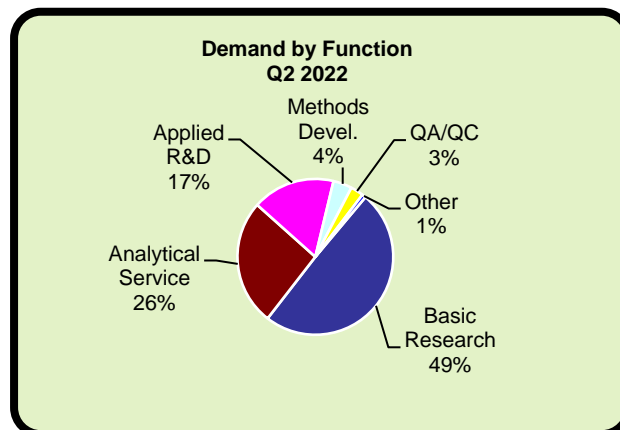


Regional Demand

Asia-Pacific demand remained very hot, seeing growth of more than 15% in the quarter. Fears concerning Chinese growth proved to be relatively unwarranted, as the country still performed strongly for life science products and reagents. India, South Korea and Southeast Asia also performed well. In contrast, Japanese growth was negative, although this was largely due to significant currency headwinds. Organic growth in Japan was good across biopharma and research laboratories.

End-User Markets

Basic research formed nearly half of the functional demand for life science reagents in Q2. This includes a broad range of academic and government research into basic principles, but there is also significant demand in the private sector, primarily from the broader biopharma industry in the study of disease mechanisms and novel methods for addressing them. Broadly speaking, private demand is growing faster than public demand, but many countries are carrying out specific research programs that are well-funded.



Market Developments

In June, PerkinElmer announced three new RUO library preparation kits. In July, at AACR, PCR Biosystems launched Air-Dryable Probe 1-Step Mix, a versatile all-in-one, air-dryable 4x RT-qPCR reagent mix suitable for dried assay formats. In August, QIAGEN expanded its next-generation sequencing (NGS) portfolio with the launch of QIAseq Targeted DNA Pro Panels and the QIAseq UPXome RNA Library Kit.

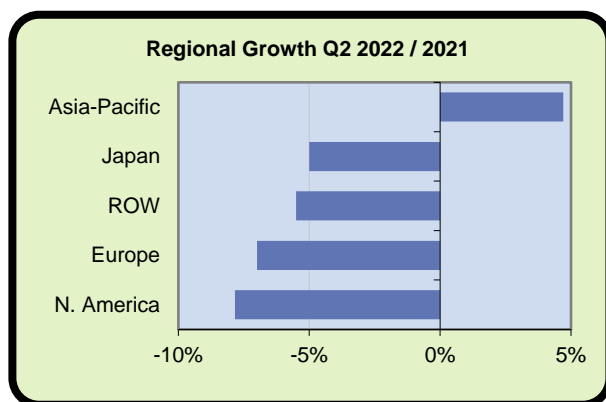
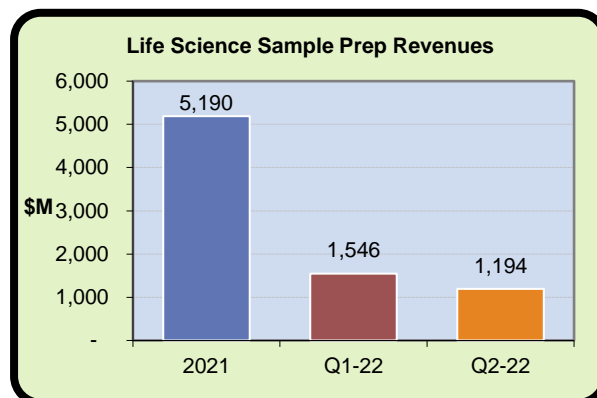
Near Term Prospects

Growth should remain quite positive through the end of the year, but the slackening demand for pandemic-related supplies is likely to keep growth more moderate in the mid single digit range. PCR and sequencing revenues will be most affected by these headwinds. Other reagent types will likely achieve double digit growth in the near term.

PART O. LIFE SCIENCE SAMPLE PREPARATION

Overview

Life science sample preparation includes both automated purification systems and magnetic bead purification systems, in addition to related components, consumables, and service. This segment does not include diagnostic applications, but instead focuses on life science research. The market declined by 5.5% in Q2 2022, as COVID-related demand for NA prep declined sharply in nearly all regions, with the exception of China, and end users reacted to economic challenges.

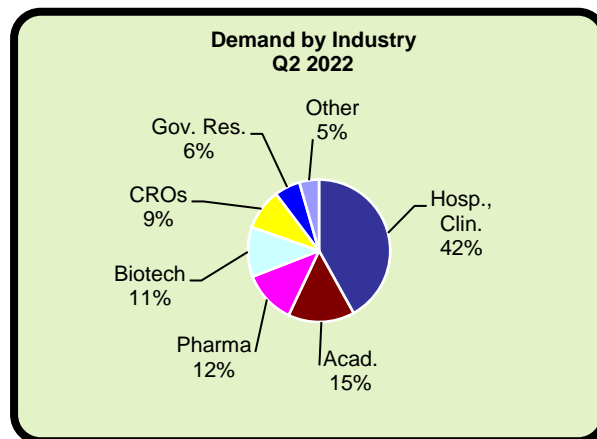


Regional Demand

Sustained strong demand in China drove growth in the Asia-Pacific region, while all other regions experienced declining demand compared to the previous year. China continues to employ its strict COVID response, which includes mass and repeated testing, and lockdowns of neighborhoods and cities. In addition to lower COVID-related demand, other regions were also impacted by supply chain difficulties and more conservative budget management among labs.

End-User Markets

Despite decreasing demand in nearly all regions which culminated in a double-digit decline, demand for sample prep by the hospital and clinical industry remains highly elevated compared to the pre-pandemic market, making it the largest source of demand in Q2. However, the declining trend is expected to continue. The pharmaceutical, biotech, and CRO end markets were the bright spots in the quarter, with each seeing low double-digit growth; growth in other markets was fairly flat.



Market Developments

In May, QIAGEN announced the launch of environmentally friendly QIAwave nucleic acid extraction kits.

In April, Purigen Biosystems announced a distribution agreement with GC biotech, granting GC exclusive distribution rights of Purigen's automated Ionic Purification System in several European countries.

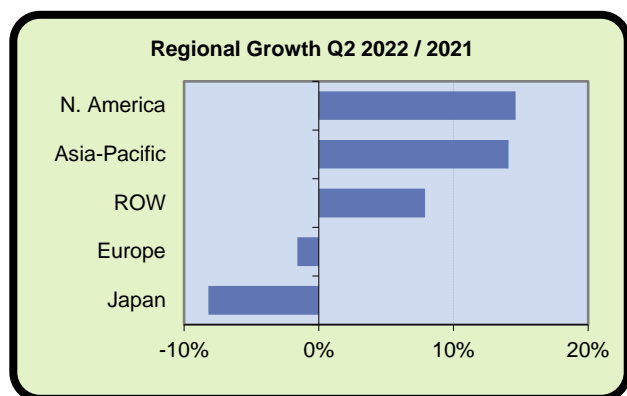
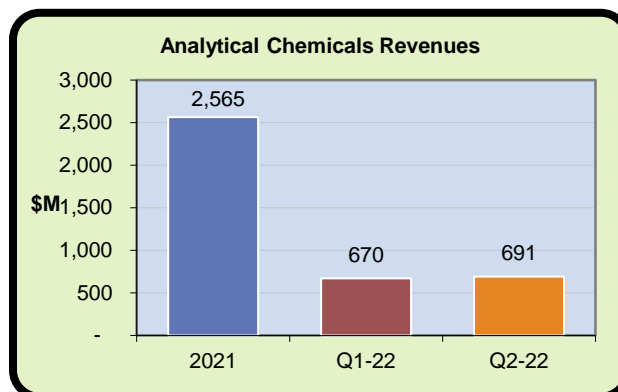
Near Term Prospects

The decline of COVID-related demand is expected to continue, both on a year-over-year and sequential basis, in the near-term. This will be coupled by worsening economic and energy challenges, which will prompt more conservative budget management among end users.

PART P. ANALYTICAL CHEMICALS

Overview

Total demand for analytical chemicals and solvents rose 8.2% year-over-year, despite significant currency effect headwinds. Chromatography usage remains high, and demand was also strong from semiconductor labs and other industrial customers, contributing to quarterly growth. This section includes chemicals used directly in concert with the instrumentation considered in other sections.

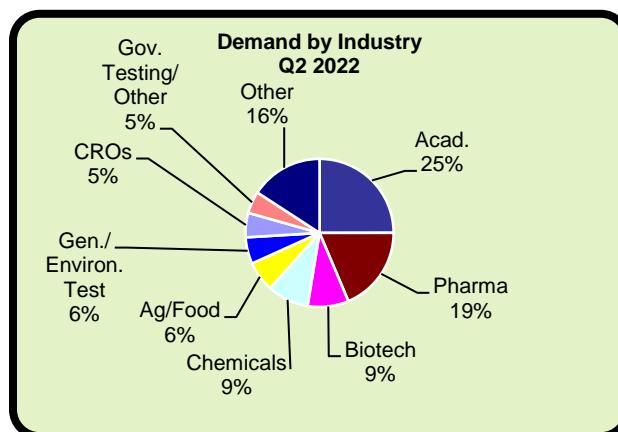


Regional Demand

By a small margin, North America saw the greatest regional growth in the past quarter, just surpassing Asia-Pacific. Both had similar growth drivers from pharma and industrial customers. China and India were particularly strong for biopharma and pharma related research and quality control. ROW saw some welcome growth, with Latin America being a particularly strong performer. Europe and Japan had moderate organic growth, but currency effects eroded gains.

End-User Markets

Although growth in the academic market was relatively weak in Q2, this segment is still by far the largest source of demand, making up a full quarter of total revenues. Pharmaceutical labs are the second largest segment, and this area made great gains in the quarter across research, quality control and production related spending. Food safety applications were strong in the quarter, as were several of the industrial markets: semiconductors, energy, and chemicals.



Market Developments

In May, Calibre Scientific acquired ServiQuimia, a Spanish distributor serving the Iberian peninsula. In June, AnalytiChem acquired Chem Service, which produces and distributes organic neat and synthetic reference materials. In August, Tosoh Corporation announced it will increase the production capacity of separation and purification media Toyopearl and TSKgel PW at its Nanyo Complex.

Near Term Prospects

The latter half of the year is expected to see slower growth than the first two quarters, but growth should remain positive. Pharmaceutical spending will remain the primary growth driver for chemicals.