Analytical, Life Science & Diagnostics Association

Industry Market Assessment - Quarterly Review

May 2021

First Quarter (Q1 2021)

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 first quarter of 2021 (January to March). 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 ***2021 SDi Global Assessment Report.*** Updated market data from the most recent edition of the ***Global Assessment Report*** has now been incorporated into the ALDA data, resulting in some resizing of markets, but no changes in definitions. The year 2020 presented significant challenges to our market estimates and models; most product areas have seen adjustments based on the more comprehensive research presented in the Global Assessment Report. The most significant changes were in the Cell Analysis and Lab Equipment markets. Cell Analysis was adjusted downward by 3.8%, while Lab Equipment has been increased by 3.8%. Life science instrumentation and sample prep have been downgraded by a little over 3% each. The remaining 12 categories were adjusted by less than 3%, with an average variance of 1.2%. In total, market revenues for the ALDA categories were adjusted downward by 0.7% to $50.7 billion in 2020, indicating that growth from 2019 was essentially flat. Due to the number of reassessments, this quarter's presentation also provides a restated look at calendar year 2020. We regret any inconvenience caused by these adjustments.

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 second quarter results will be published at the end of August.

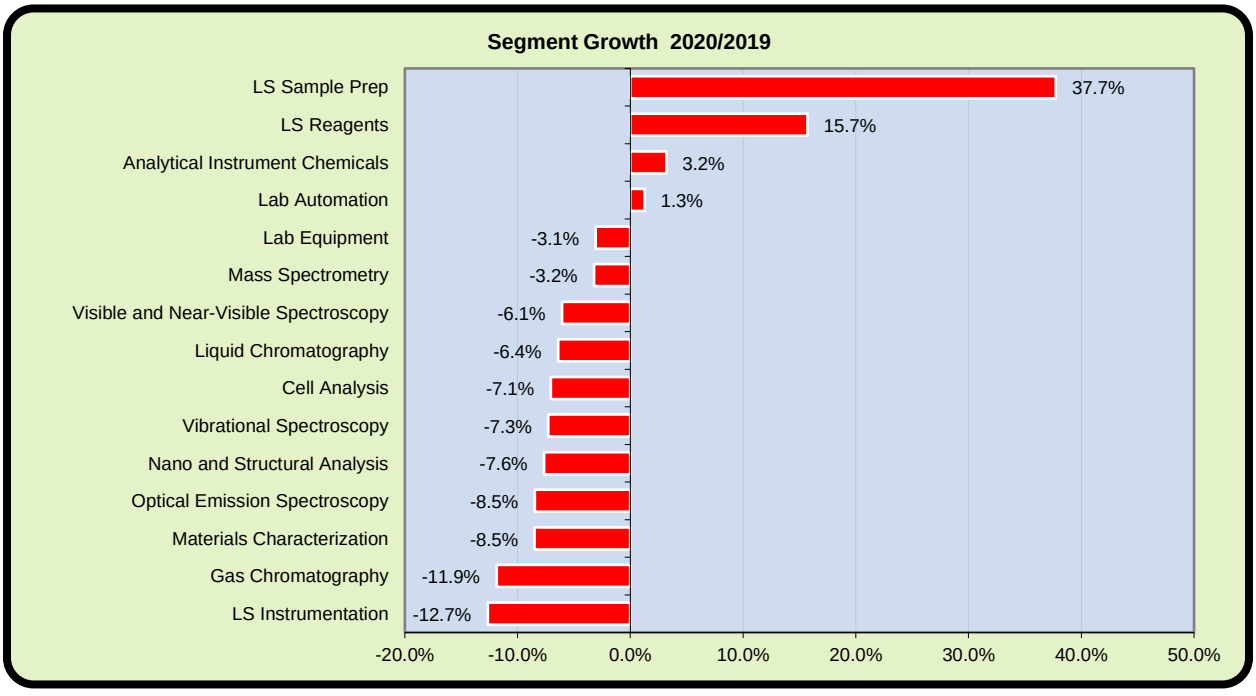
SDi has been providing consulting and market intelligence to industry participants for 40 years. Together with its sibling organizations within Science and Medicine Group, we offer complete market research support for our clients in the life science, analytical, and diagnostics industries. We are well-positioned to assess industry trends based upon our infrastructure for tracking market developments for both our consulting practice and our various publications including the ***2021 SDi Global Assessment Report—The Laboratory Analytical and Life Science Instrumentation Industry***. Recent and forthcoming report topics include an expanded second edition of last year's ***Global Laboratory Consumables***, focusing on that important product segment. Another large-scale report will cover instrument demand from the broader Pharma/Bio space including applications and tools from drug discovery to QA and bioprocessing. Other 2021 reports will provide more detail on various regional markets for instruments, including a report on the Chinese market published earlier this month. 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. FINAL 2020 REVENUES RESTATEMENT

Twelve Months Revenues by Product

$Mil	2020	2019	Growth
Spectroscopy and Materials Analysis	**14,490**	**15,530**	**-6.7%**
Laboratory Equipment	3,012	3,107	-3.1%
Materials Characterization	1,953	2,134	-8.5%
Nano and Structural Analysis	4,997	5,410	-7.6%
Optical Emission Spectroscopy	1,222	1,335	-8.5%
Vibrational Spectroscopy	1,612	1,739	-7.3%
Visible and Near-Visible Spectroscopy	1,694	1,803	-6.1%
Chrom, Mass Spec & Automation	**15,147**	**15,912**	**-4.8%**
Gas Chromatography	2,428	2,755	-11.9%
Laboratory Automation	3,642	3,597	1.2%
Liquid Chromatography	5,135	5,487	-6.4%
Mass Spectrometry	3,943	4,074	-3.2%
Life Science	**18,873**	**17,171**	**9.9%**
Cell Analysis	1,424	1,532	-7.1%
Life Science Instrumentation	4,233	4,846	-12.7%
Life Science Reagents	8,664	7,487	15.7%
Life Science Sample Prep	4,552	3,305	37.7%
Analytical Chemicals	**2,218**	**2,150**	**3.2%**
Total	**50,728**	**50,762**	**-0.1%**

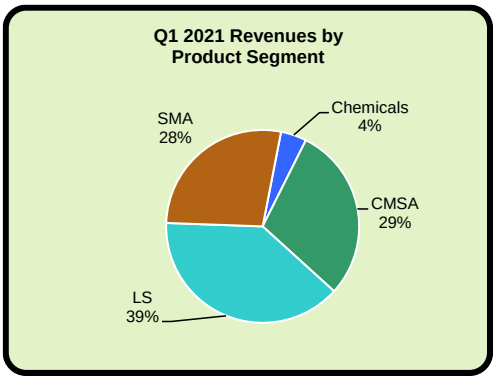


PART B. FIRST QUARTER MARKET RESULTS

Q1 Revenues by Product Segment

$Mil	2021	2020	Growth
Spectroscopy and Materials Analysis (SMA)	3,926	3,395	15.6%
Chrom, Mass Spec & Automation (CMSA)	4,191	3,396	23.4%
Life Science (LS)	5,548	4,484	23.7%
Analytical Chemicals	620	530	17.1%
Total	**14,285**	**11,805**	**21.0%**

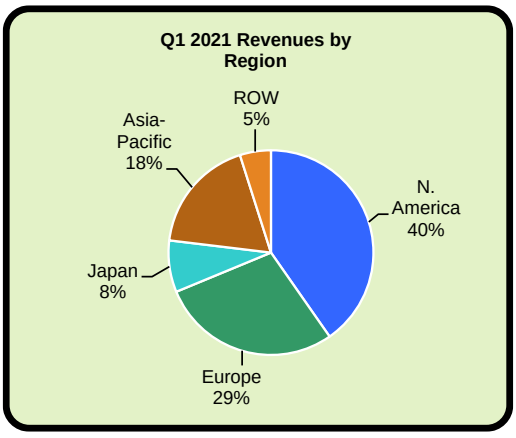
In Q1 2021, total demand in the industry soared 21%, exceeding $14 billion for the second consecutive quarter. The huge growth is partly due to the comparison with 2020, when first quarter demand fell 1.8% year-over-year. Life science (LS) products slightly edged out chromatography, mass spectrometry & automation (CMSA) to be the fastest growing segment. CMSA's strong quarter was driven by resurgent chromatography and mass spec sales. Analytical chemicals grew in the high teens, while the spectroscopy and materials analysis (SMA) market climbed 15.6%.



Q1 Revenues by Region

$Mil	2021	2020	Growth
N. America	5,757	4,883	17.9%
Europe	4,064	3,314	22.6%
Japan	1,166	1,057	10.3%
Asia-Pacific	2,599	1,931	34.6%
ROW	699	620	12.7%
Total	**14,285**	**11,805**	**21.0%**

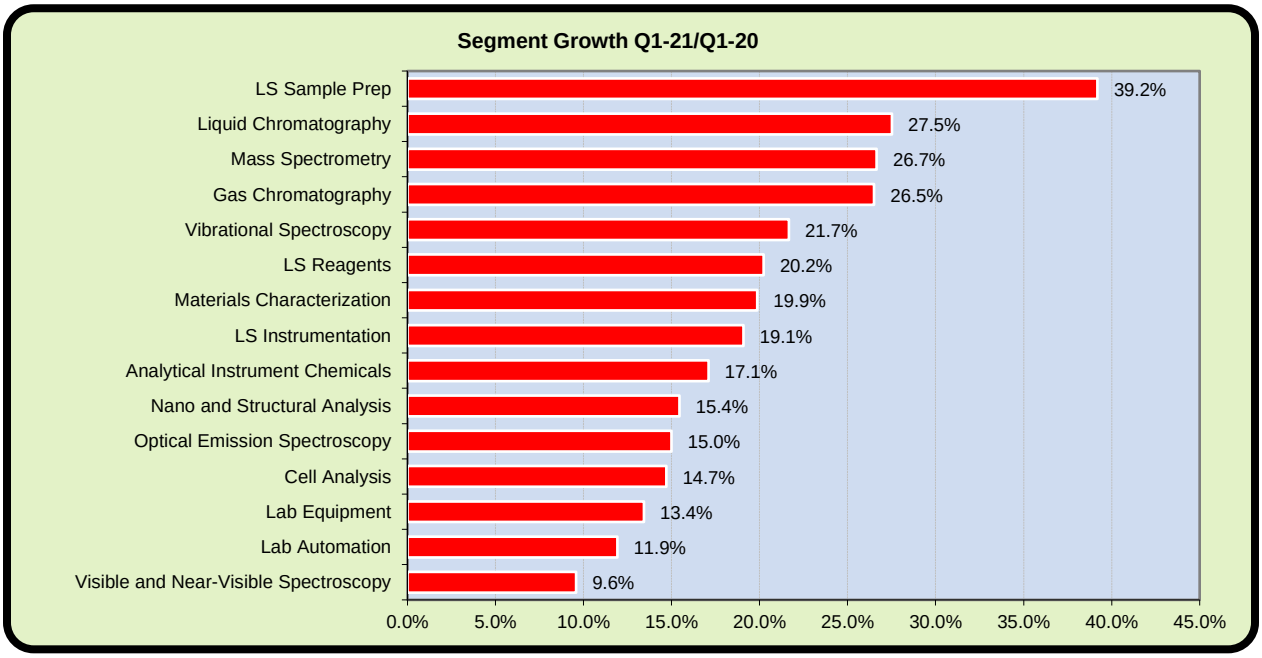
Asia-Pacific demand experienced the most year-over-year growth, driven by organic sales across all customer types and the comparison with 2020, when China was in lockdown as the early epicenter of COVID-19. Europe also saw better than average growth in the quarter, boosted by currency effects of 6%-7% against the dollar, on top of strong pharma sales and returning demand in academic labs. North America grew in the high teens as demand picked up across most end-markets. Japan and ROW achieved double-digit growth in the first quarter as well. Latin American growth in Brazil and Mexico was unexpectedly strong.



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.

Q1 Revenues by Product

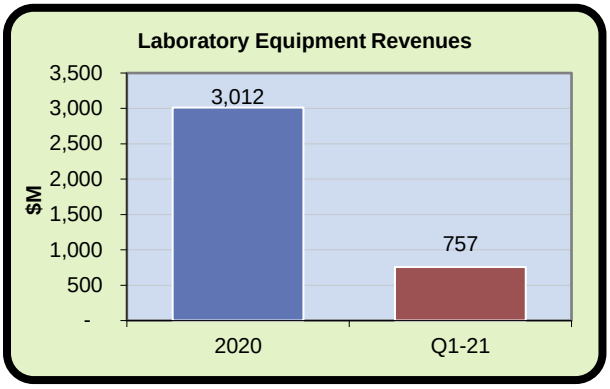
$Mil	2021	2020	Growth
Spectroscopy and Materials Analysis	**3,926**	**3,395**	**15.6%**
Laboratory Equipment	757	667	13.4%
Materials Characterization	546	456	19.9%
Nano and Structural Analysis	1,399	1,212	15.4%
Optical Emission Spectroscopy	325	282	15.0%
Vibrational Spectroscopy	466	383	21.7%
Visible and Near-Visible Spectroscopy	433	396	9.6%
Chrom, Mass Spec & Automation	**4,191**	**3,396**	**23.4%**
Gas Chromatography	753	595	26.5%
Laboratory Automation	905	808	11.9%
Liquid Chromatography	1,406	1,103	27.5%
Mass Spectrometry	1,127	890	26.7%
Life Science	**5,548**	**4,484**	**23.7%**
Cell Analysis	399	348	14.7%
Life Science Instrumentation	1,096	920	19.1%
Life Science Reagents	2,679	2,228	20.2%
Life Science Sample Prep	1,375	987	39.2%
Analytical Chemicals	**620**	**530**	**17.1%**
Total	**14,285**	**11,805**	**21.0%**

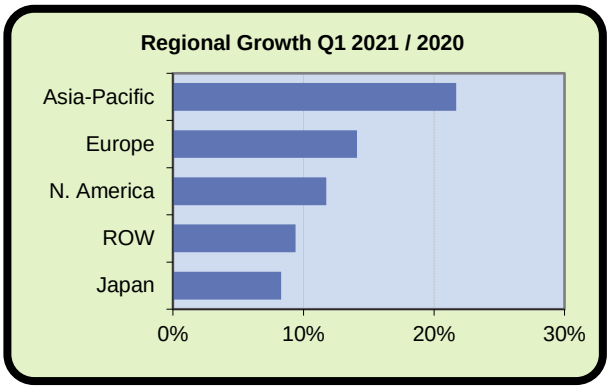


PART C. LAB EQUIPMENT

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 strengthened demand led by pharma/bio and recovering growth in academia. Demand in the quarter rose 13.4% to more than $750 million.



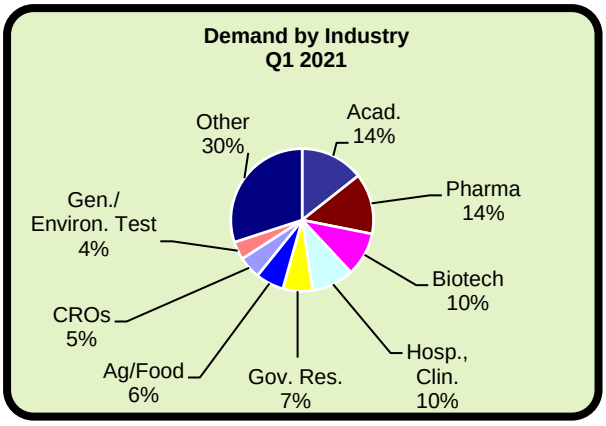


Regional Demand

Regional demand returned to growth in the first quarter. Asia-Pacific is seeing high double-digit growth driven by market leading demand from China. Pharma/bio and academia were key drivers of demand in the region. Europe saw improved demand for the quarter led by pharma/bio. North America saw growth in line with Europe over the quarter driven by strong pharma/bio and industrial performance.

End-User Markets

Pharma and biotech accounts for almost 25% of the demand by industry. Academia returned to growth this quarter, largely reversing the trend of declining growth which persisted throughout 2020. Improvements were also seen by the hospital and clinical segment as many key end markets continue to see rebounding demand for lab equipment, analytical chemistry consumables, and pandemic related products and services.



Market Developments

Mettler-Toledo showcased its latest automation capable balance, the XPR Automatic, which will be released in Q2. Sartorius, one of the largest lab equipment suppliers, raised its guidance, indicating increasing stability in demand for lab tools in 2021.

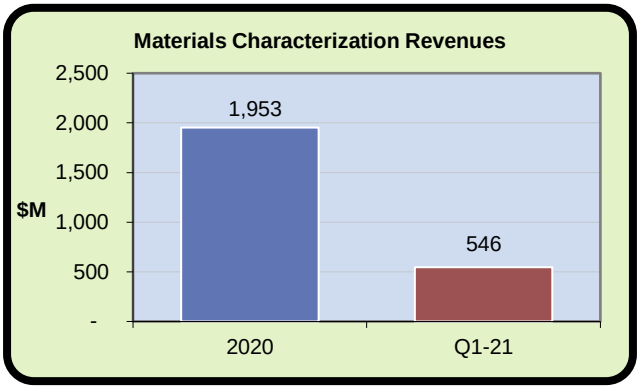
Near Term Prospects

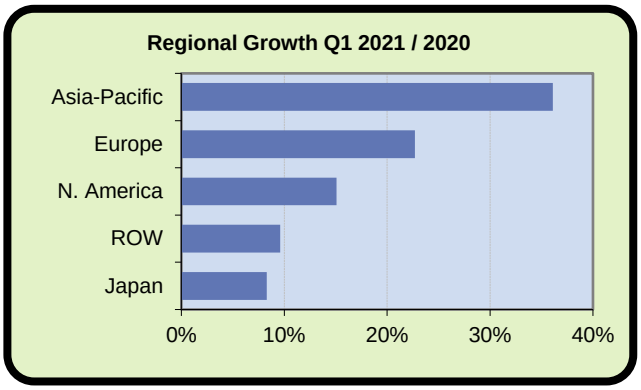
Academia, applied, and industrial markets will see a strong recovery of demand in 2021, led by academia. Trends in pharma/bio performance will continue, as strong demand for lab-based testing is expected to continue to benefit demand for lab equipment. Pandemic specific growth will begin to shift further towards routine lab operations in the latter part of 2021.

PART D. 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. For the first quarter of 2021, demand grew by 19.9% compared to last year.



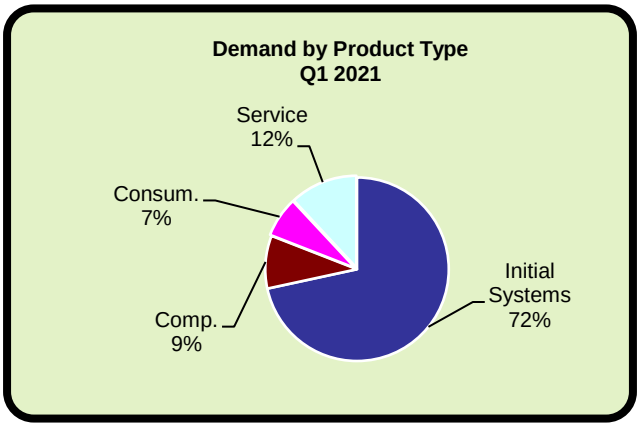


Regional Demand

Asia-Pacific led the regional growth as China had a sharp rebound from the pandemic, especially in pharma and food testing demand. The industrial sector in Europe and the US also had a significant sequential improvement, leading to increasing materials characterization demand in both regions. Good performance in polymers and continuing robust demand from semiconductors also contributed to growth in almost all regions.

Product Segmentation

As the materials characterization technologies in this section are generally not very dependent on reagents or chemicals, they tend to have a relatively small aftermarket. Initial systems comprise almost three-fourths of total sales. The initial systems segment grew the fastest this quarter as the economic recovery from the pandemic led to significant instrument sales, boosted by pent-up demand in the past year, especially in China.



Market Developments

In February, Microtrac MRB and OleiniTec Nordic AB entered into an exclusive distribution agreement for OleinitTec to distribute the CAMSIZER product line by MICROTRAC in Sweden and Finland. In March, Izon Sciences launched the Exoid nanoparticle measurement device. In the same month, CANNON Instrument introduced the CAV 4.1 single bath kinematic viscometer.

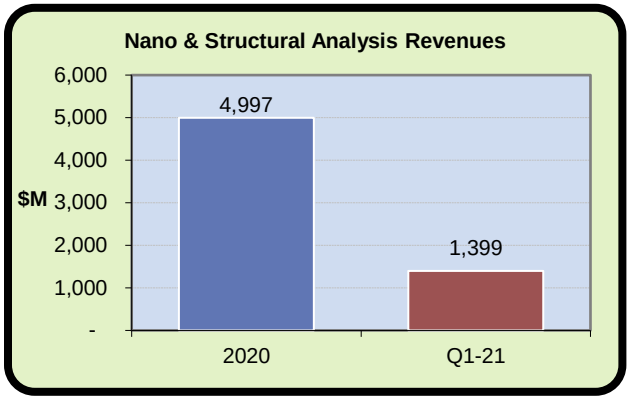
Near Term Prospects

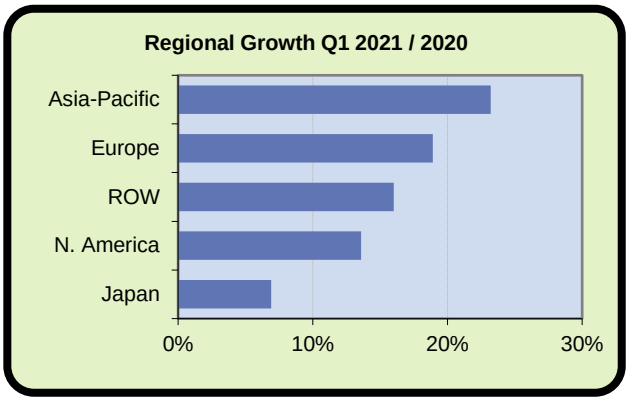
The materials characterization market is projected to again have high double-digits growth in the second quarter as improving demand in the chemical and polymer industries continues to yield instrument sales. The ongoing strong run in the pharma, food, and semiconductor industries will also support growth in the second quarter. However, slower recovery in the oil & gas industry still holds the market back for some products.

PART E. 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. First quarter revenues increased 15.4%, aided by the prior year comparison from the beginning of the pandemic.



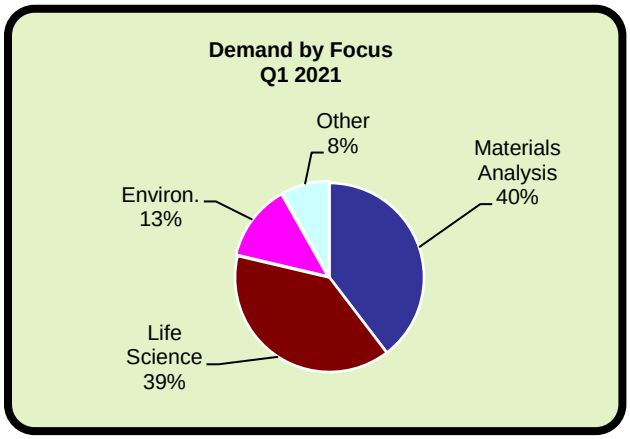


Regional Demand

Asia-Pacific growth led the regional picture, aided in particular by strong Chinese activity over a poor 2020 comparison. Other Asian markets also did well, but more in the teens in terms of growth. A stronger euro boosted Europe into the second position, but organic growth was also significant across all end-markets, particularly pharmaceuticals. Japanese growth was more moderate, in part due to the country's relative stability in Q1 2020.

End-User Markets

Demand from life science applications remained strong throughout 2020, due to general pharma/bio demand and specific research and response to COVID-19. In contrast, materials science applications were severely impacted. Consequently, materials analysis applications saw the greatest year-over-year growth in Q1 2021, and slightly edged out life science in terms of overall size. Some of this strong growth came from industry, but another important component is from materials science academic labs, which have now returned to near-normal operation.



Market Developments

In January, the Carlyle Group announced that Carlyle Japan acquired approximately 80% of Rigaku Corporation, with the remainder retained by Rigaku's CEO. Rigaku is a global leader in XRD and XRF. In March, Ampersand Capital Partners announced a minority investment in Magritek, a provider of benchtop and portable NMR.

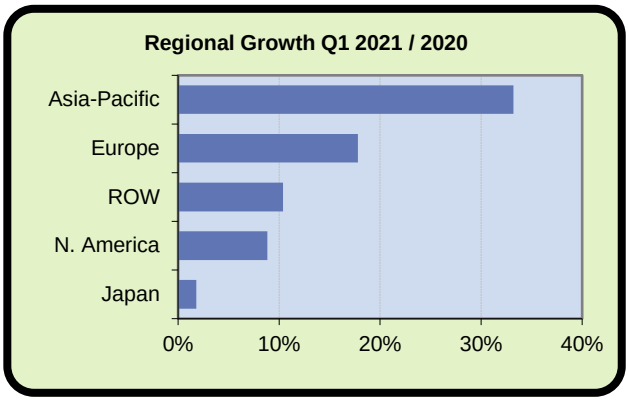
Near Term Prospects

Reopening academic labs are continuing to promote growth in research applications, and this will particularly benefit some of the larger ticket research systems in NMR and electron microscopy, as delayed projects are brought back on line.

PART F. 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 the first quarter, demand increased 15.0%. Environmental spending throughout Europe and Asia was a key driver of demand for AA and ICP.

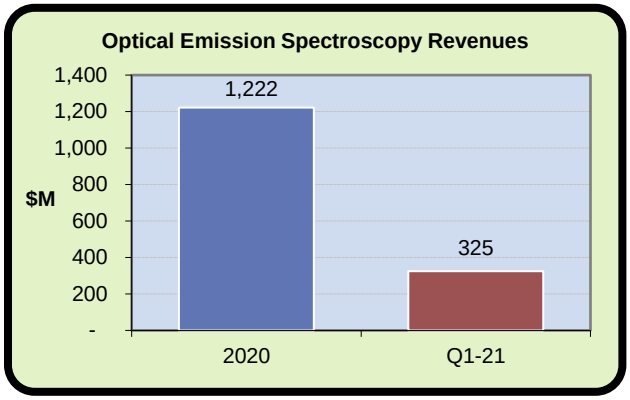


End-User Markets

Analytical services labs make up over half of the total demand. This segment includes many labs that handle environmental samples, as well as third party testing duties for other types of industry, such as food and pharma. Strong environmental demand in the quarter helped this segment to slightly expand its margin over the next largest segment, QA/QC. The latter segment saw somewhat less growth, as it is tied to many industrial applications. Although these applications grew in the quarter, demand was more moderate.

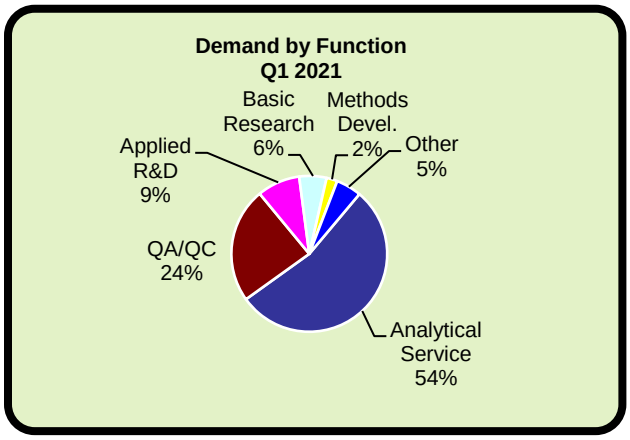
Market Developments

In February, SciAps introduced a new generation handheld LIBS, the Z-901. In March, Hitachi High Tech launched the OE720, an affordable arc/spark system very suitable for aluminum analysis. In April, Rigaku introduced the KT-500 handheld LIBS with a miniature echelle spectrometer that improves performance with detecting carbon and other elements.



Regional Demand

Asia-Pacific demand easily outpaced all other regions in Q1 2021. The comparison in China was particularly stark year-to-year due to the strict lockdowns of a year ago, but environmental and food demand was strong across the region. European growth was also above average, as strong environmental and academic growth combined with favorable exchange rates to drive growth into the high teens. The ROW segment also increased spending in the double digits, with Brazil, Mexico and Africa seeing brisk sales.



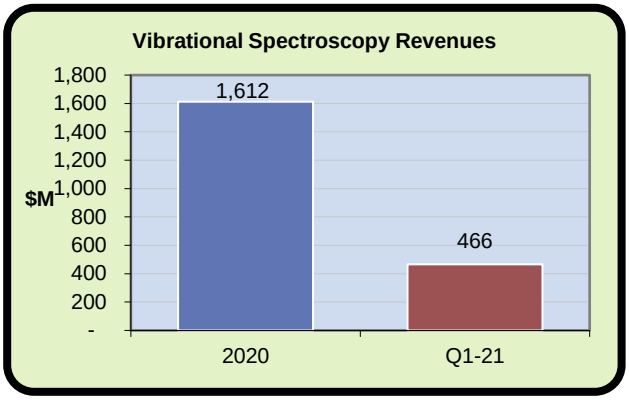
Near Term Prospects

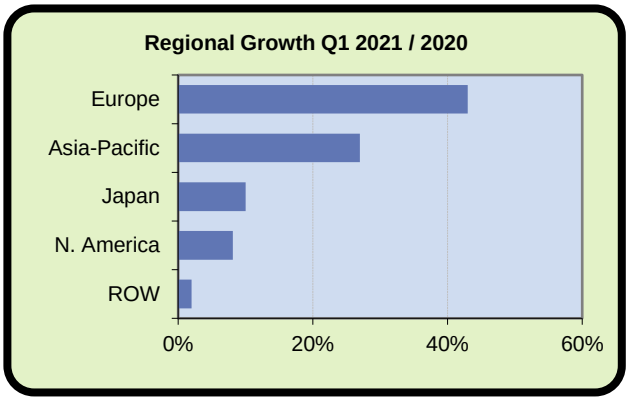
Environmental and water quality issues should support sustained high growth in this product segment. Q2 2020 was the worst performing quarter of 2020, so the favorable comparison should also boost reported growth, even if sequential growth is relatively modest.

PART G. VIBRATIONAL SPECTROSCOPY

Overview

The vibrational spectroscopy market comprises infrared, 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. Due to a favorable comparison and general economic recovery, Q1 2021 grew by 21.7%.



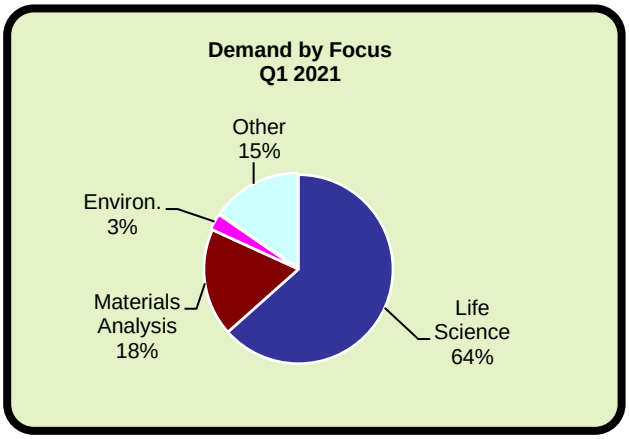


Regional Demand

Europe led regional growth for vibrational spectroscopy in the first quarter of the year. Strong year-over-year growth from academia and ag/food fueled this growth in the region. Asia-Pacific also saw strong growth for the quarter. Growth for life science applications in hospital and clinical labs as well as pharma/bio were the main sources of growth for this region.

End-User Markets

Life science accounts for about two-thirds of demand by focus. For Q1 2020, life science also saw the most year-over-year growth. Academia will continue to drive demand in the near term as a result of life science-related research. Materials analysis also saw double-digit growth. Much of the growth for this segment of demand by focus was driven by ag/food across several regions. Disruptions in international trade negatively affected ag/food demand, but this will dissipate along with the pandemic. Environmental also saw strong growth, but demand for these particular products is small for such applications.



Market Developments

WITec announced new features to its ParticleScout tool for their line of Raman microscopes featuring new time optimization features. TrinamiX and VIAVI Solutions announced a joint agreement to develop an NIR spectrometer for smartphone integration.

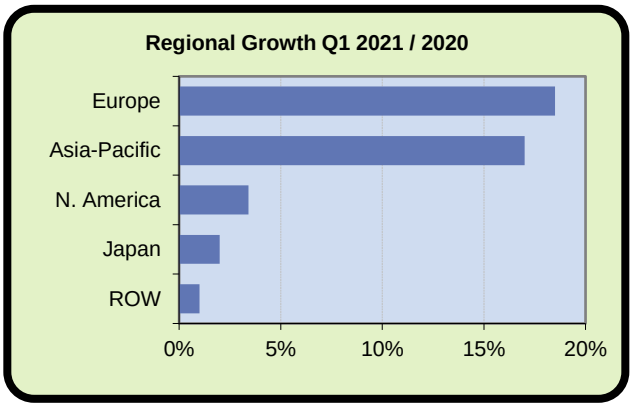
Near Term Prospects

As the coronavirus pandemic continues to wane, many key end markets for vibrational spectroscopy will continue to see strong growth. Q2 2020 was when the effects of lockdowns came into effect for most of the globe, so next quarter should easily produce double-digit growth.

PART H. 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 say strong growth at 9.6% through the first quarter of 2021.

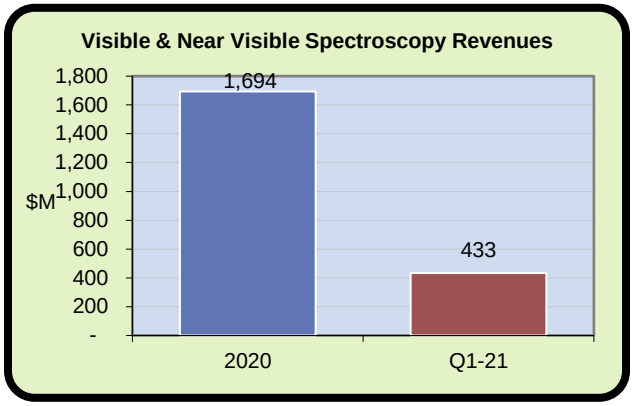


End-User Markets

Biotech and pharmaceuticals account for the largest shares of demand by end market. These end markets produced strong double-digit growth over the course of the quarter as drug development and clinical research begins to transition away from COVID-19 related research to broader usage. Strong recovery from ag/food and academia also drove growth over the quarter. Semiconductors account for about 6% of demand, including the majority of ellipsometry demand over the quarter, driving that segment of visible and near visible methods to double-digit growth.

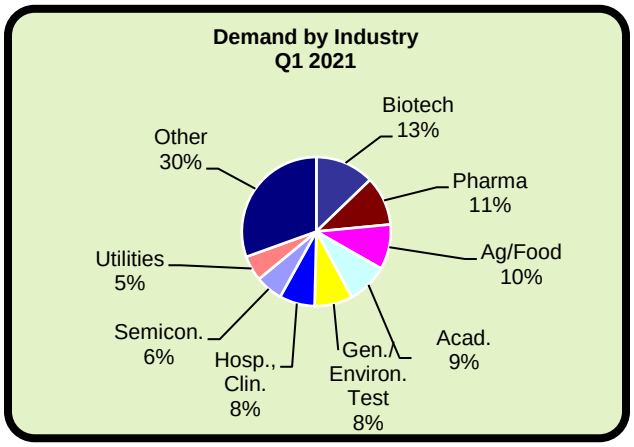
Market Developments

Datacolor launched the Spectro 1000/700 series of benchtop spectrophotometers for color measurement applications. JASCO released four new spectrofluorometers as the new FP-8050 series. Testa Analytical Solutions released a new HK series dn/dc differential refractometer.



Regional Demand

Regional growth over Q1 2021 was led by Europe. The region saw broad growth across many key end markets, particularly pharma and biotech. Asia-Pacific also saw strong growth over the quarter. Continuing the trend from the end of 2020, semiconductors and electronics continued to experience strong demand, which drove Asia-Pacific sales. The region also saw growth driven by recovering end markets in academia, ag/food, and hospital and clinical labs.



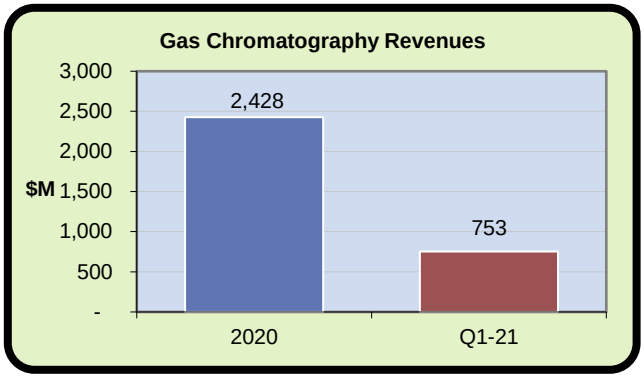
Near Term Prospects

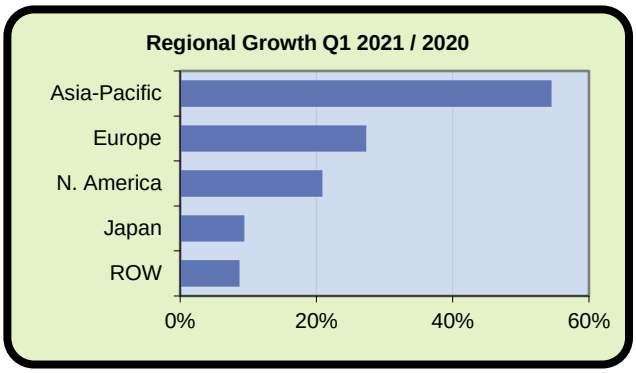
With coronavirus cases continuing to drop globally, many key end markets will see demand slowly returning to pre-pandemic levels. As a result, visible and near visible techniques will see strong year over year growth in Q2 2021 and beyond, particularly from academic, government, and applied markets.

PART I. 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 26.5% in the first quarter of 2021 compared to last year, signaling a rebound from the pandemic.



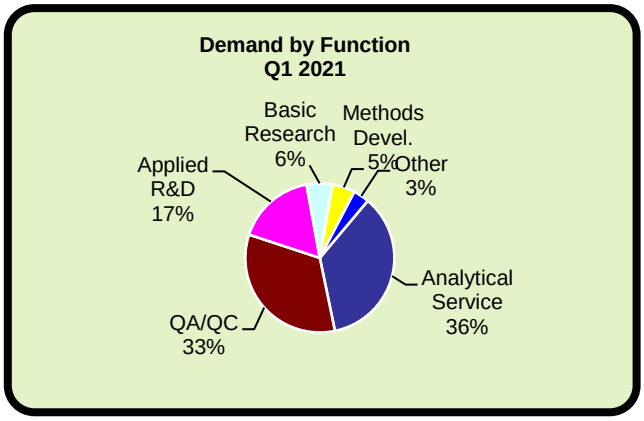


Regional Demand

Asia Pacific grew by over 50%, led by China as the country is strongly rebounding from the pandemic. Food and academia did exceptionally well in China. The chemical and energy sector also grew double digits, driven by robust demand in Europe. Meanwhile, increasing environmental testing demand in the Americas further fueled overall GC growth.

End-User Markets

GC and GC/MS are mainly used in analytical service and QA/QC functions, each accounting for around one-third of the market share in the quarter. The analytical service segment grew robustly driven by solid food and environmental testing demand in almost all regions. Similarly, the QA/QC function also had vigorous growth, supported by rebounding demand in the industrial sector. Applied R&D grew the fastest, fueled by continuous strong demand in pharma.



Market Developments

In January, Teledyne Technologies entered an agreement to acquire FLIR for approximately $8 billion. In February, Shimadzu released the AOC-30 series of automatic sample injection systems for GC. JEOL also launched the JMS-T2000GC AccuTOF GC-Alpha in the same month. In March, Thermo Fisher announced its new Orbitrap Exploris GC 240 MS, while Agilent introduced the 8697 Headspace Sampler.

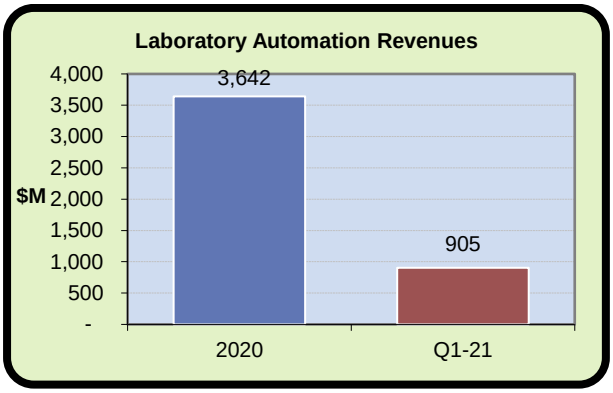
Near Term Prospects

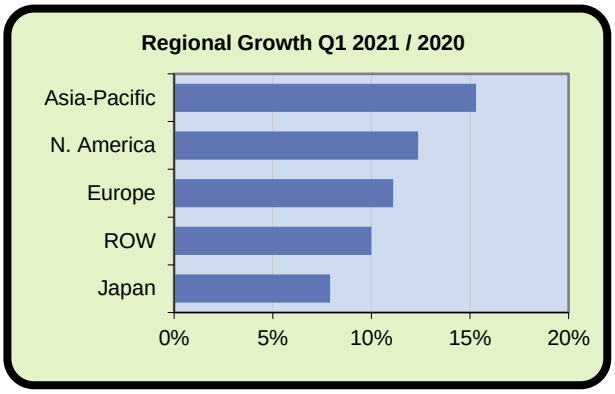
The GC market is projected to grow high double digits in Q2 supported by continuing momentum in the pharma, food, and environmental markets. Stronger recovery in academia and the industrial sector will further bolster GC demand in the second quarter. Demand in oil & gas is still recovering slower than expected, though. In terms of regional growth, the US is projected for a stronger rebound in Q2.

PART J. 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 11.9% relative to the same period in 2020.



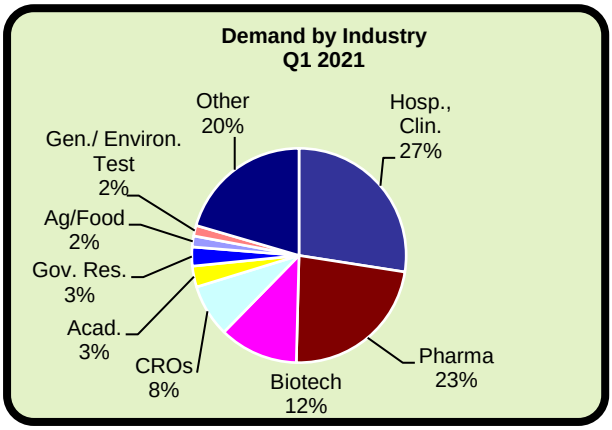


Regional Demand

Asia-Pacific demand grew in double digits for the quarter, with the Chinese laboratory market being particularly strong. In addition to pandemic related demand, Chinese labs broadly saw strong demand from automation in the public and private sector. Liquid handling and high throughput environmental and food testing also contributed significantly to regional growth trends. COVID-19 testing strengthened demand for automation across regions and technologies.

End-User Markets

Automation supports many high growth life science sampling applications. Clinical, pharma and biotech industries benefited from demand for automated diagnostic products. Pharmaceutical research was a strong source of demand led by liquid handling and multiplex systems. Food and environmental testing saw strong growth, similarly, led by demand for high-throughput testing. Demand from academia and government research rebounded but was outpaced by other segments.



Market Developments

Brooks Automation announced plans to separate its Semiconductor and Life Science businesses into two independent public companies. SPT LabTech purchased BioMicroLab, expanding automation product offerings. Luminex, a multiplex/high throughput molecular diagnostic supplier, is to be acquired by DiaSorin.

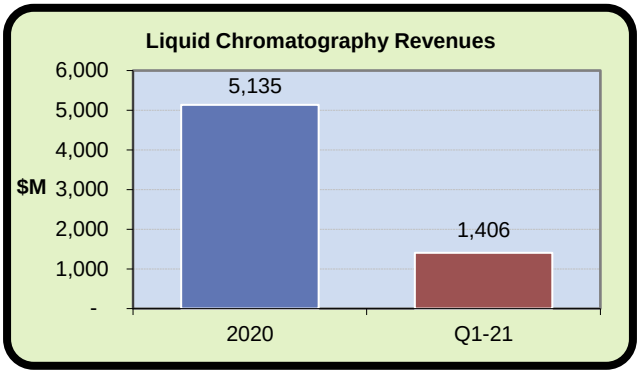
Near Term Prospects

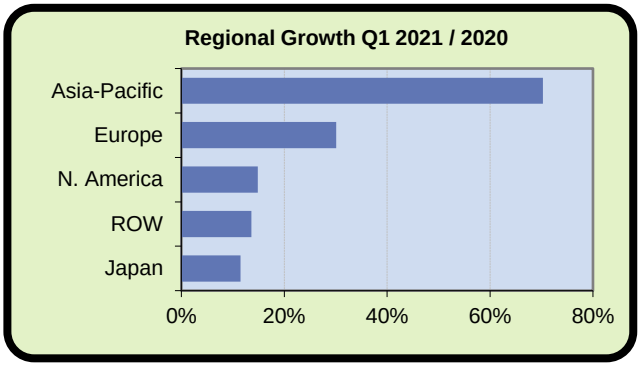
Clinical, pharmaceutical and biotech markets were led by pandemic related demand early in 2021. This trend will continue throughout the year but should normalize as demand for non-COVID-19 products improves. Meanwhile, general improvement is expected in other market segments compared to 2020.

PART K. 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 first quarter of 2021, demand for liquid chromatography rebounded by 27.5% compared to the same quarter last year as more laboratories worldwide are recovering from the pandemic.



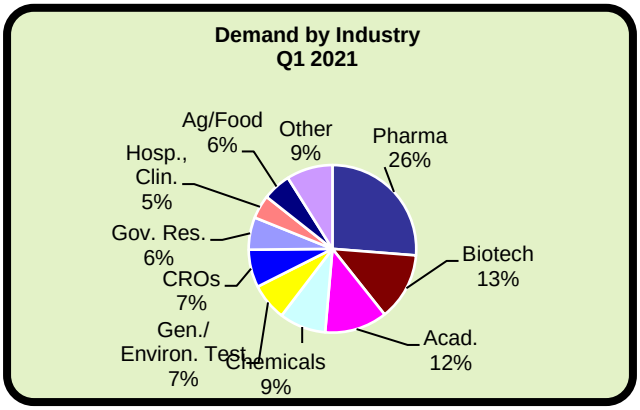


Regional Demand

All regions had positive growth rates in the first quarter of 2021 due to pent-up demand through the past year. Asia-Pacific led regional growth in Q1 driven by a significant rebound in China with increasing demand in every end market. Europe also had exceptional growth, especially in its pharma/bio sector. Meanwhile, the US slightly lagged behind as its academic labs are recovering slowly.

End-User Markets

In Q1 2021, all industries experienced significant growth. Pharma and biotech are the largest end markets for LC and they were among the fastest growing segments in this quarter. Academia also grew significantly driven by a sharp rebound in China and Europe but slightly offset by slower gains in the US. Food and environmental testing also had healthy growth, especially in China. Growth in the industrial sector was led by chemical and semiconductor labs.



Market Developments

In January, Sartorius entered an agreement to acquire the chromatography process equipment division of Novasep. In February, Waters introduced the ACQUITY PREMIER LC solution with MaxPeak HPS technology. In the same month, Thermo Fisher launched the Vanquish Online 2D-LC, while Shimadzu announced its new i-Series LC-2050/LC-2060 Integrated HPLC. In March, PerkinElmer expanded its LC consumables portfolio by acquiring ES Industries.

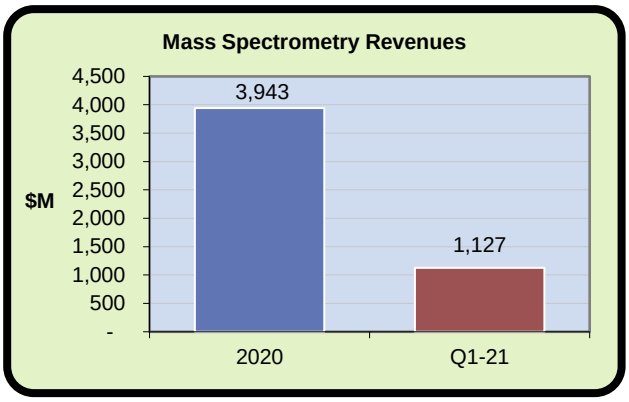
Near Term Prospects

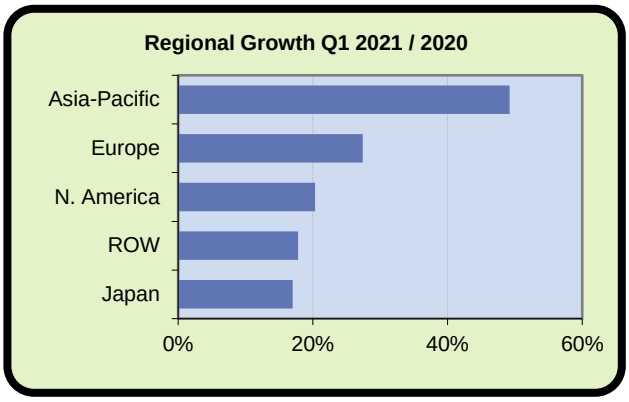
In the second quarter of 2021, Asia Pacific, especially China, is expected to continue its strong run. Academic demand in North America will also start picking up its pace. Meanwhile, India is projected for a slowdown as the country has become severely affected by the pandemic. Overall, LC replacement will continue to support demand in Q2, sustaining the market's robust growth.

PART L. 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 26.7% in the first quarter of 2021 compared to that of last year, led by increased demand for LC/MS instruments.



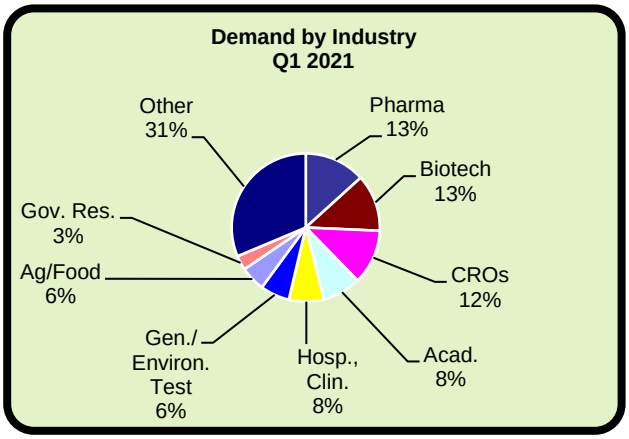


Regional Demand

The first quarter saw double digit growth in all regions. The market experienced phenomenal growth from China, a predictable effect considering the country's lockdown in the early part of 2020. Favorable currency effects further buoyed growth in China and Europe. Demand in North America and Europe was driven by pharma/bio, though the latter region had stronger growth from academia. Despite detrimental currency effects, Latin America pulled off double-digit growth thanks to strong demand from Brazil and Mexico.

End-User Markets

Market demand from pharmaceuticals, biotechnology, and CROs comprise well over a third of the mass spec market, an area responsible for most of the growth that occurred in the first quarter. Demand from biopharma was nearly twice as strong as that of small molecule pharma. Sales from academic and government end markets rebounded strongly in China and Europe in particular. Growth from environmental and food labs was generally in the high single digits.



Market Developments

Waters launched a new peptide multi-attribute method workflow for the Waters BioAccord LC/MS system. Waters also launched the ACQUITY RDa Detector, featuring SmartMS analysis for pharmaceuticals, academia, foods, and forensics. Thermo Fisher and Protein Metrics entered into a co-marketing agreement to provide advanced MS data processing and analysis capabilities.

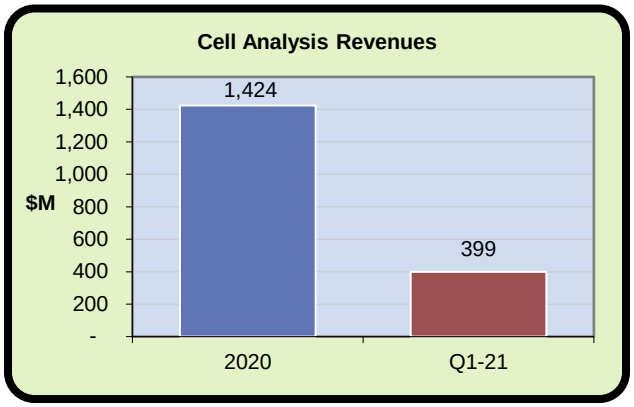
Near Term Prospects

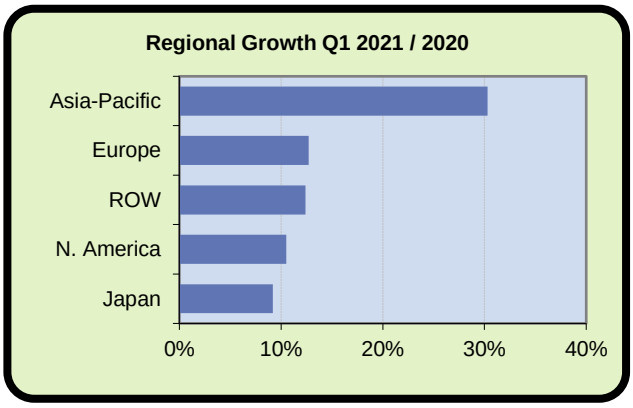
Partly due to pent-up demand and partly due to market comparisons to the global onset of the pandemic last year, mass spec is on track for double digit growth in the second quarter, with market rebounds expected from all end markets.

PART M. 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 14.7% in the first quarter.



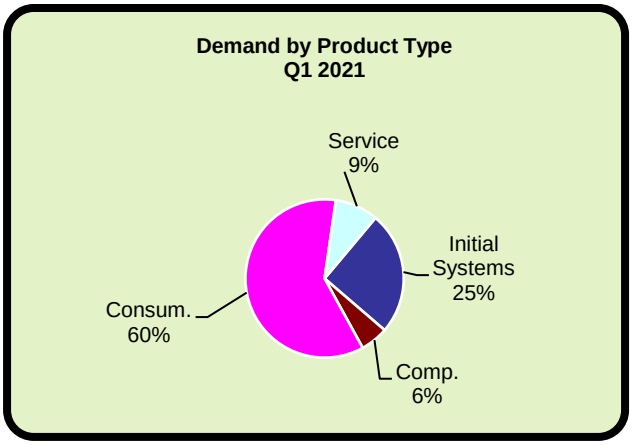


Regional Demand

China and other Asia Pacific countries led market growth during the first quarter by a wide margin thanks to robust demand from pharma/bio and increased spending from academic labs. Other regions grew in the high single digits or low double digits, primarily due to substantial gains from pharma/bio, as well as rebounding demand from clinical labs.

Product Segmentation

The bulk of the cell analysis market is comprised of consumables, which drove overall sales during the first quarter. Instruments comprise about a quarter of the market, which also grew well during the first three months of 2021 thanks to pent-up demand and increased spending from academia, particularly in China and Europe.



Market Developments

Jianshun Biosciences (JS Bio) announced its strategic partnership with electroporation supplier Etta Biotech to set up a high titer transient protein expression platform for protein production using JS Bio's transient transfection media. JS bio also because the exclusive cell culture supplier for Elta Biotech's transient transfection high titer expression platform.

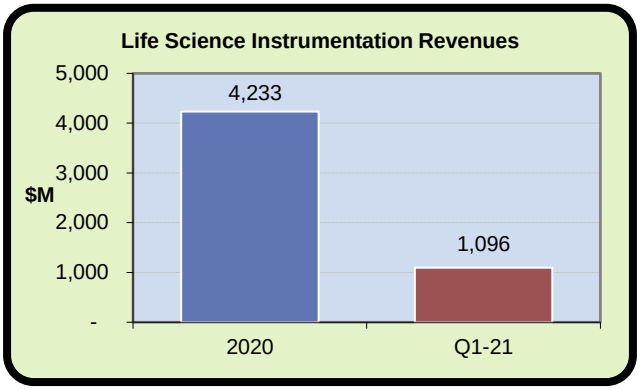
Near Term Prospects

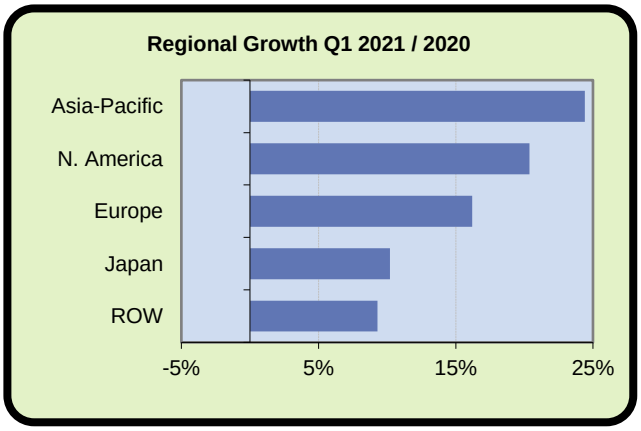
Demand from pharma/bio will continue to drive sales for cell analysis technologies, though recovery and pent-up demand from academia will soon assist growth across most geographies as well.

PART N. 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. In the first quarter of 2021, the market grew by an estimated 19.1% over the same period last year, with each individual product segment experiencing double-digit growth.



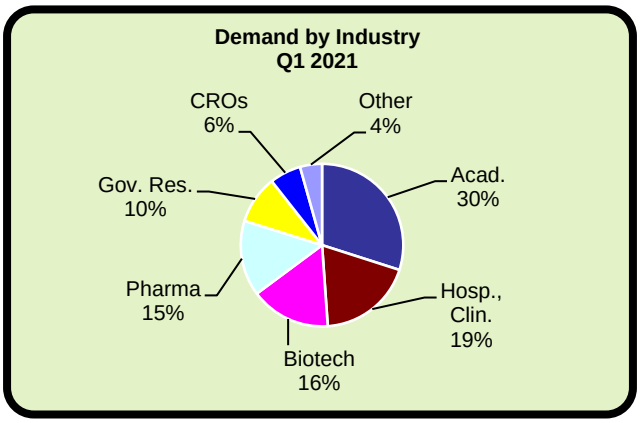


Regional Demand

Double-digit growth was seen in all regions. Growth was led by the Asia-Pacific region, where the anniversary of the COVID-19 response in China created a dramatic year-over-year comparison. North America and Europe also saw strong growth as the recovery of lab operations released pent-up demand for instrumentation across pharma and other life science research labs.

End-User Markets

Laboratory operations in academia are finally approaching pre-pandemic levels, though the strength of life science instrumentation demand varied by region. Hospital and clinical growth demand was propelled by LDT diagnostics, driven by continuing COVID-related demand. The biotech, pharmaceutical, and CRO industries continued their strong growth trajectories, though lingering operational capacity limits created access challenges for instrument vendors.



Market Developments

In the wake of the COVID-19 pandemic, investment in pathogen surveillance infrastructure has become a global priority, driving demand for instruments while also prompting philanthropic activities. Thus far, instrument suppliers, philanthropic foundations, and others have announced commitments in the hundreds-of-millions of dollars to help create a comprehensive global pathogen genomic network.

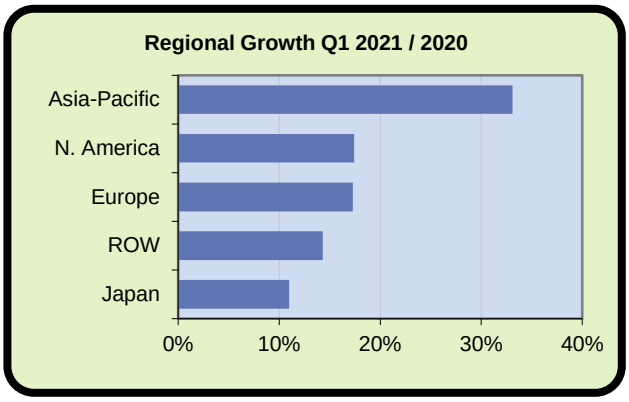
Near Term Prospects

While the recovery of the life science instrumentation market is well underway, risks and concerns linked to COVID remain, as regional surges continue amid uneven vaccination distribution and other factors. Of particular concern is India.

PART O. LIFE SCIENCE INSTRUMENT REAGENTS

Overview

Products considered in this section are primarily consumables used with life science instrumentation, cell analysis, and laboratory automation systems. Total demand for life science instrument reagents increased 20.2% in the first quarter compared to a year ago. COVID-19 continues to provide tailwinds in the diagnosis and response efforts, but other parts of research and industry are returning back to vitality after the lockdowns of 2020.

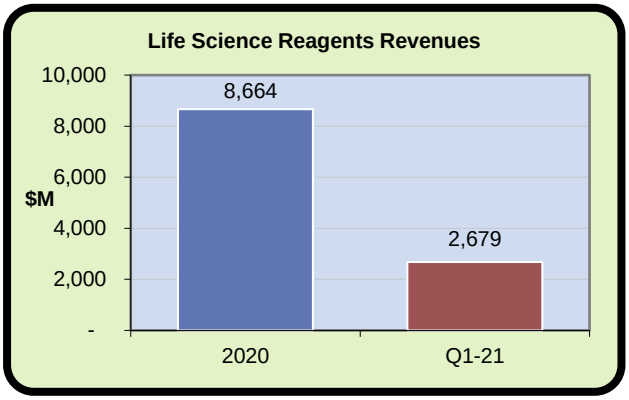


End-User Markets

By focus area, life science reagents are understandably concentrated within life science applications. Materials applications are negligible, and even environmental applications make up just 3% of the demand. The environmental space has received a recent boost in the form of water testing for traces of the novel coronavirus in wastewater.

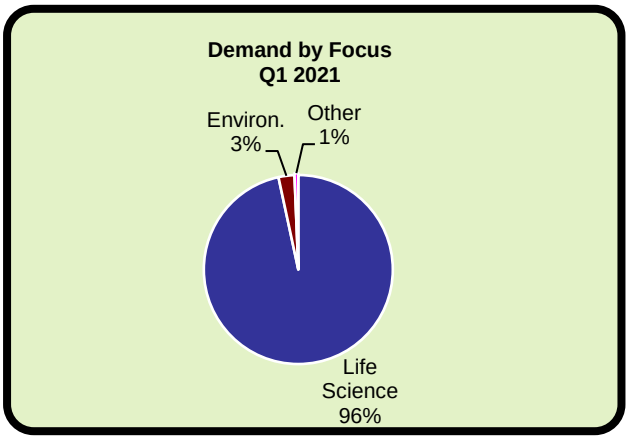
Market Developments

In April, global IVD company DiaSorin announced its intention to acquire Luminex, which offers xMAP technology and other tools and reagents for the life science research market. Luminex also has an important business in diagnostics. In January, Gamma Biosciences acquired BioMagnetic Solutions, which provides a novel ferromagnetic fluid cell separation technology.



Regional Demand

Asia-Pacific demand grew more than 30% in the first quarter. China was particularly strong across all markets, with CROs standing out as one of the fastest-growing and significant segments. North America and Europe had performances in the teens, supported by pharma and biopharma spending. Academic spending for life science research also experienced improvements. ROW and Japan both achieved double digit growth in the quarter.



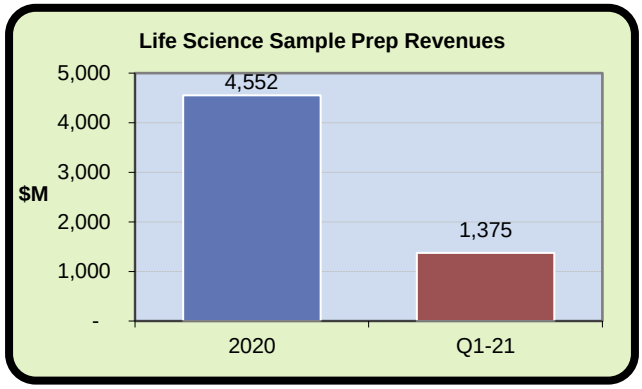
Near Term Prospects

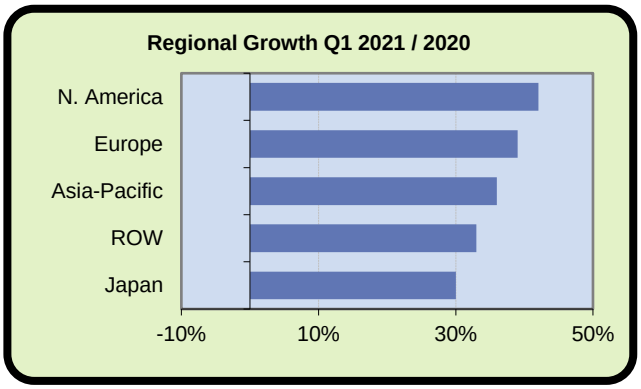
While COVID-19-related demand is not dropping to zero, the overall mix of applications is becoming much more varied throughout research and industry. Generally, this will support growth in usage beyond the core genetic instruments, with improving gains for mass spectrometry, chromatography and cell analysis.

PART P. 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. Demand grew by 39.2% in Q1 2021 compared to the same quarter last year, as COVID-19 diagnostic testing continued to drive strong demand for NA prep. However, demand has begun to ebb sequentially.



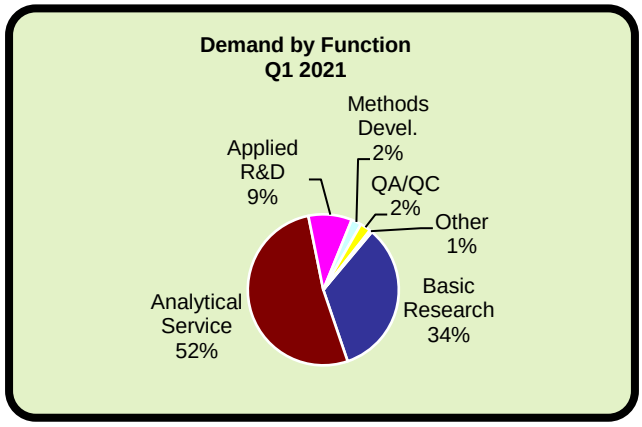


Regional Demand

All regions continued to experience very strong demand growth as relaxing restrictions and winter holidays resulted in regional surges in COVID-19 infections. The quarter also marked the beginning of widespread vaccination efforts, though global vaccine distribution has been very uneven. Established markets drove demand for automated NA prep, while developing nations continued to rely primarily on manual workflows.

End-User Markets

Analytical services (including COVID-19 LDT diagnostics) continued to dominate the life science sample prep market. However, the quarter was also marked by improving demand among all other functions, with double-digit growth for all of them in a return to normalcy. Notably, the return of academic laboratory operations to near pre-pandemic levels drove a return to positive growth for basic research functions.



Market Developments

Purigen Biosystems, a provider of next generation technologies for extracting and purifying nucleic acids from biological samples, launched the Ionic FFPE Complete Purification Kit, enabling the automated extraction of nucleic acids from a wide range of formalin-fixed paraffin-embedded tissues using isotachophoresis technology.

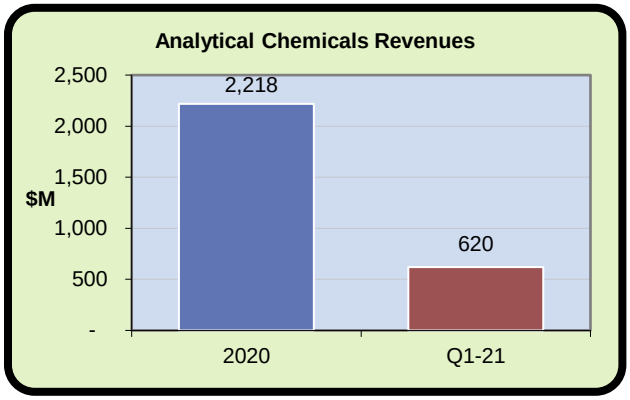
Near Term Prospects

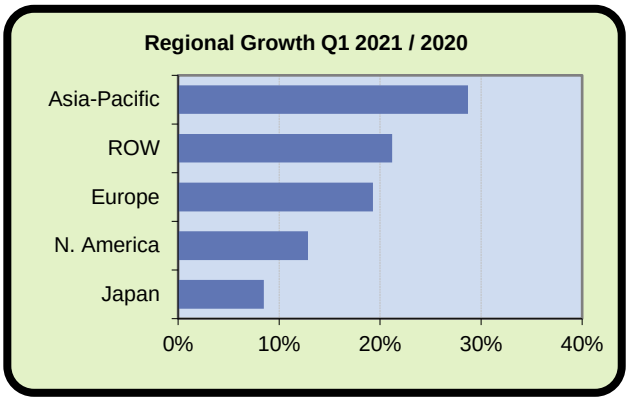
Vaccination programs are ultimately going to reduce the need for COVID-19 diagnostic testing, resulting in the decline of demand for RNA prep. However, uneven vaccine distribution will drive regional shifts in demand through the rest of the year.

PART Q. ANALYTICAL CHEMICALS

Overview

In the first quarter of 2021, total demand for analytical chemicals and solvents rose 17.1% year-over-year, reaching $620 million. The high growth was not entirely due to the pandemic-affected comparison. Growth was strong in Q4 2020, and Q1 2021 saw sequential growth over that high mark. This section includes chemicals used directly in concert with the instrumentation considered in other sections.



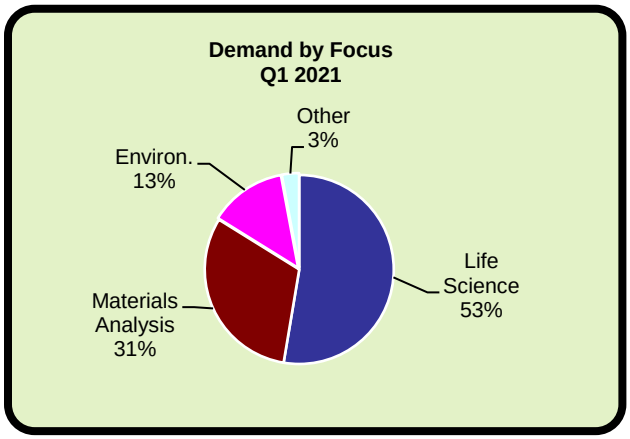


Regional Demand

Asia-Pacific continued to lead the way in terms of growth in demand. Chinese demand was particularly strong, driving growth in the segment nearly to 30%. ROW and European labs were also very strong in the quarter with growth hovering around 20%. Pharma labs led in terms of growth, but academic, environmental and food labs were also regional highlights. North American academic labs were somewhat slower to ramp up demand, and Japan's high single digit growth was the slowest, but still healthy.

End-User Markets

Life science labs continue to drive growth for products across the laboratory spectrum, including analytical chemicals. Life science demand now makes up a majority of the market. However, as the pandemic dissipates, materials analysis labs in industry and academia will be resurgent later in the year. Environmental demand for chemicals was also quite strong in Q1. These applications make up 13% of total demand.



Market Developments

In February, Hanna Instruments announced a partnership with GFS Chemicals. The partnership will allow Hanna to expand its chemicals portfolio, and become a one-stop-shop for titration customers. They will be able to order titrators as well as Karl Fischer titration solutions and other solvents and reagents for peroxide value, acid number, and other applications.

Near Term Prospects

Industrial labs are starting to show signs of life, and as 2021 progresses, these labs will increase demand for chemicals and other consumables, adding to the already robust pharma/bio sector. Pharma will remain strong.