

Nanalysis Scientific Corp.

Initiating Coverage – Scientific Instrument Miniaturization Should Resonate with Investors as Big Gains Come in Small Packages

NSCI-TSXV: \$1.09
Buy
\$2.85 Target

Projected Return: 161%

Event: We are initiating coverage of Nanalysis Scientific Corp. with a Buy rating and \$2.85/shr target price representing ~161% upside. Nanalysis is a provisioner of compact Nuclear Magnetic Resonance (NMR) spectrometers that we believe will transform the way laboratory- and field-based users approach chemical analysis. Its advanced instruments and software packages are used in industries including oil & gas, cannabis, synthetic chemistry, and biotech/pharma. Nanalysis is also developing portable, compact magnetic resonance imaging (MRI) devices and sells components used in both conventional NMR and MRI equipment.

Investment Thesis:

- The First Truly Benchtop NMR Instruments Open New Markets to Drive Dramatic Growth**
 Nanalysis' NMR instruments provide the optimal balance of performance, portability, and user-friendliness to serve new markets better than competitors. We expect this heightened market penetration to drive dramatic growth of 124% in 2021 and 76% in 2022, as the technology is quickly adopted in the marketplace.
- Industry Vertical Partnerships are Key Strategic Growth Drivers to Expand Markets**
 Ongoing collaborations with impressive industry partners such as Bosch in shipping vessels (BOSCHLTD-NSE, NR) and Sartec in oil refineries (SRS-BIT, NR) are expected to yield instruments tuned for specific operating environments. This would greatly accelerate the adoption of NMR by users in a ~US\$1B TAM made up of a diverse set of industries that currently lack access to traditional NMR instruments and other quality analytical methods.
- SaaS Revenues Smooth the Top Line and Bolster Instrument Sales** – Recurring revenues from recently acquired, complementary software platforms will smooth and boost both the top line and margins while simplifying the NMR workflow for users.
- Strategic M&A Another Source of Growth to Maintain Technological Leadership** – On top of industry leading innovation, Nanalysis looks to continue its record of small, strategic acquisitions of complementary technologies and software platforms to enhance its technological leadership and competitive position and broaden its market opportunity.
- NMR Tech Lays the Foundation for Huge Opportunity for Disruptive Miniaturized MRI**
 Nanalysis is also developing portable MRI instruments, powered by the same technology as the NMR instruments, which could enter and meaningfully expand the ~US\$8B MRI market in the coming years.
- Ample Sales Backlog as Manufacturing Capacity Expands** – Since the launch of the 100 MHz instruments, sales have been restrained only by instrument manufacturing capacity. This is abating, however, as the Company has recently acquired more space and onboarded more staff to double the number of instruments shipped per month.

Valuation Warranted Based on Portable NMR Business, MRI Provides Upside Optionality: We are initiating coverage of Nanalysis with a Buy rating and \$2.85 price target derived using an 8x 2022 EV/Sales multiple, consistent with that of its broader Scientific Instrument peer group. While our valuation is based solely on the NMR business, we note that the portable MRI opportunity represents meaningful upside optionality over the longer-term and we would look to revisit our price target upon announcement of further key partnerships and milestones.

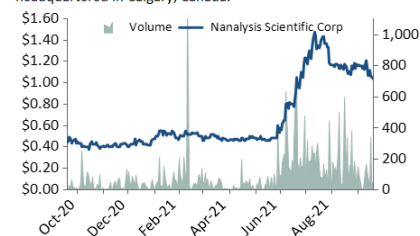
Nanalysis Scientific Corp.		
Market Cap.	Basic (C\$M)	84
	FD (C\$M)	97
Pro-forma Net Debt	(C\$M)	-9
Enterprise Value	FD (C\$M)	88
Basic Shares O/S	(M)	77
FD Shares O/S	(M)	89
Avg. Daily Volume	(M)	188
52 Week Range		\$0.38 - \$1.50

Financial Metrics			
FYE - December 31	2020A	2021E	2022E
Revenue (\$M)	7.9	17.7	31.4
Gross Profit (\$M)	5.2	11.6	20.9
EBITDA (\$M)	(1.6)	3.2	6.3
EPS	(\$0.06)	(\$0.00)	\$0.02

Valuation Data				
		2020A	2021E	2022E
EV / Sales	NSCI	11.2x	5.0x	2.8x
	Peers	11.4x	8.8x	7.9x
EV / EBITDA	NSCI	NM	27.7x	14.0x
	Peers	40.4x	28.4x	25.3x

Quarterly Data					
		Q1	Q2	Q3	Q4
Revenue (\$M)	2020	1.5	2.0	1.7	2.7
	2021	3.3	4.3	3.7	6.4
	2022	7.3	7.5	7.3	9.3
EBITDA (\$M)	2020	(0.5)	(0.2)	(0.4)	(0.6)
	2021	0.3	1.2	0.6	1.1
	2022	1.4	1.4	1.5	2.0
EPS	2020	(\$0.01)	(\$0.01)	(\$0.02)	(\$0.02)
	2021	(\$0.01)	\$0.00	(\$0.00)	\$0.00
	2022	\$0.00	\$0.00	\$0.00	\$0.01

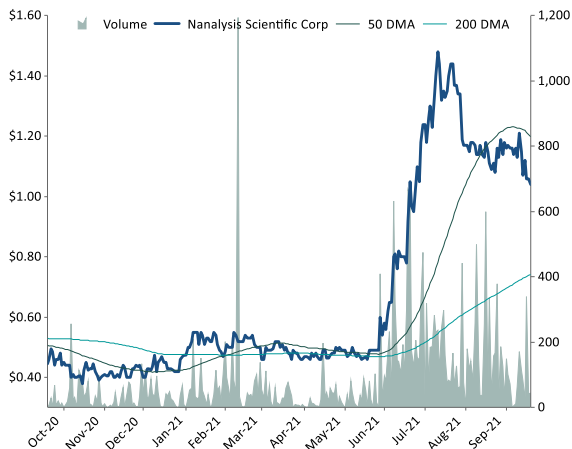
Company Description
 Nanalysis Scientific Corp., develops, manufactures, and sells compact nuclear magnetic resonance (NMR) spectrometers and MR imaging equipment for the pharmaceutical, biotech, chemical, security, food, materials, and education industries. It operates through Nanalysis, RS2D, and Corporate segments. The company also manufactures and sells cutting-edge electronics components for precision analytical instruments; and provides monitoring and supporting services for its NMR technologies. It sells its instruments in approximately 40 countries. The company is headquartered in Calgary, Canada.



Source: CapIQ, FactSet, ECM

Nanalysis Scientific Corp. (TSXV: NSCI, \$1.09) - Data Sheet

Buy | PT: \$2.85



Company Description

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Consensus Ratings			
	3M Ago	Current	Return
Rating:	NA	NA	
Target:	NA	NA	NA
Median:	NA	NA	NA
High:	NA	NA	NA
Low:	NA	NA	NA

Consensus Distribution	
Outperform/Buy	0
Perform/Hold	0
Underperform/Sell	0
# Est	0

Key Statistics		
52-Week High	\$1.50	38%
52-Week Low	\$0.38	(65%)
Avg Vol (3-Mo)	174	
Shares Outstanding	89	
Market Cap	97	
Net Debt	-9	
Enterprise Value	88	
Div Yield	0.0%	
FYE	Dec	

Key Financial Metrics

Nanalysis	2019	Q120	Q220	Q320	Q420	2020	Q121A	Q221A	Q321E	Q421E	2021E	2022E	2023E
Revenue	8.4	1.5	2.0	1.7	2.7	7.9	3.3	4.3	3.7	6.4	17.7	31.4	43.4
Growth y/y	0%	-26%	-21%	4%	25%	-6%	115%	118%	119%	140%	125%	77%	38%
<i>Consensus Revenue</i>													
Gross Profit	6.1	1.0	1.3	1.1	1.9	5.2	2.1	2.9	2.4	4.1	11.6	20.9	29.5
Margin	72%	64%	63%	62%	70%	66%	65%	67%	65%	65%	66%	67%	68%
<i>Consensus Gross Profit</i>													
EBITDA	1.0	-0.5	-0.2	-0.4	-0.6	-1.6	0.3	1.2	0.6	1.1	3.2	6.3	9.8
Margin	12%	-30%	-9%	-26%	-21%	-21%	8%	28%	16%	17%	18%	20%	23%
Growth y/y	13 bps	-62 bps	-67 bps	-50 bps	-90 bps	-269 bps	73 bps	142 bps	103 bps	164 bps	482 bps	311 bps	348 bps
<i>Consensus EBITDA</i>													
EPS	(\$0.03)	(\$0.01)	(\$0.01)	(\$0.02)	(\$0.02)	(\$0.06)	(\$0.01)	\$0.00	(\$0.00)	\$0.00	(\$0.00)	\$0.02	\$0.04
<i>Consensus EPS</i>													

Comparables

Name	Ticker	Last Price US\$	Market Cap FD	EV (US\$M) FD	Retuns			EV/Sales			EV/EBITDA			
					1 M	3 M	YTD	1 Year	2020	2021	2022	2020	2021	2022
Nanalysis Scientific Corp.	NSCI	\$ 0.84	75	69	-5%	13%	119%	131%	11.2x	5.0x	2.8x	NM	27.7x	14.0x

Closest Peer Group - Life Sciences Instruments & Tools

Bruker	BRKR	\$ 82.09	12,489	12,659	-2%	14%	53%	114%	6.4x	5.4x	5.1x	36.5x	25.4x	23.4x
Waters	WAT	\$ 390.92	24,288	25,339	-2%	15%	60%	102%	10.7x	9.2x	8.7x	31.5x	27.0x	25.4x
Agilent Technologies	A	\$ 170.50	51,869	53,485	2%	18%	45%	72%	10.0x	8.5x	7.9x	39.6x	30.9x	27.9x
908 Devices	MASS	\$ 34.54	977	857	8%	-12%	-38%	-28%	31.9x	20.7x	16.4x	NM	NM	NM
Average					2%	9%	30%	65%	14.7x	10.9x	9.5x	35.9x	27.8x	25.6x
Median					0%	15%	49%	87%	10.4x	8.8x	8.3x	36.5x	27.0x	25.4x

Broader Peer Group - Scientific And Industrial Instruments & Tools

Bruker	BRKR	\$ 82.09	12,489	12,659	-2%	14%	53%	114%	6.4x	5.4x	5.1x	36.5x	25.4x	23.4x
Waters	WAT	\$ 390.92	24,288	25,339	-2%	15%	60%	102%	10.7x	9.2x	8.7x	31.5x	27.0x	25.4x
Agilent Technologies	A	\$ 170.50	51,869	53,485	2%	18%	45%	72%	10.0x	8.5x	7.9x	39.6x	30.9x	27.9x
908 Devices	MASS	\$ 34.54	977	857	8%	-12%	-38%	-28%	31.9x	20.7x	16.4x	NM	NM	NM
Illumina Inc.	ILMN	\$ 440.67	64,255	62,405	-10%	-4%	18%	48%	19.3x	14.3x	12.6x	75.0x	46.2x	45.0x
Thermo Fisher Scientific	TMO	\$ 592.69	232,196	243,964	6%	22%	27%	38%	7.6x	6.8x	6.9x	23.9x	21.1x	24.3x
Harvard Bioscience	HBIO	\$ 7.52	310	356	-4%	6%	77%	134%	3.5x	3.1x	2.8x	45.3x	28.0x	17.0x
National Instruments	NATI	\$ 41.17	5,493	5,372	1%	-2%	-6%	14%	4.2x	3.7x	3.4x	33.7x	22.4x	16.8x
Keysight Technologies	KEYS	\$ 174.88	32,028	31,903	3%	18%	32%	79%	7.6x	6.5x	6.2x	28.9x	21.9x	20.3x
Fortive	FTV	\$ 71.39	25,707	26,913	-2%	4%	1%	-5%	5.8x	5.1x	4.8x	26.4x	20.6x	18.9x
Cognex	CGNX	\$ 86.96	15,032	14,649	0%	10%	6%	38%	18.1x	14.0x	12.4x	63.0x	40.2x	33.7x
Hyperfine Corp.	HCAQ	\$ 9.88	958	581	0%	1%	NA	NA	NA	252.6x	35.6x	NA	NA	NA
Average (excl. Hyperfine)					0%	8%	25%	55%	11.4x	8.8x	7.9x	40.4x	28.4x	25.3x
Median (excl. Hyperfine)					0%	10%	27%	48%	7.6x	6.8x	6.9x	35.1x	26.2x	23.9x

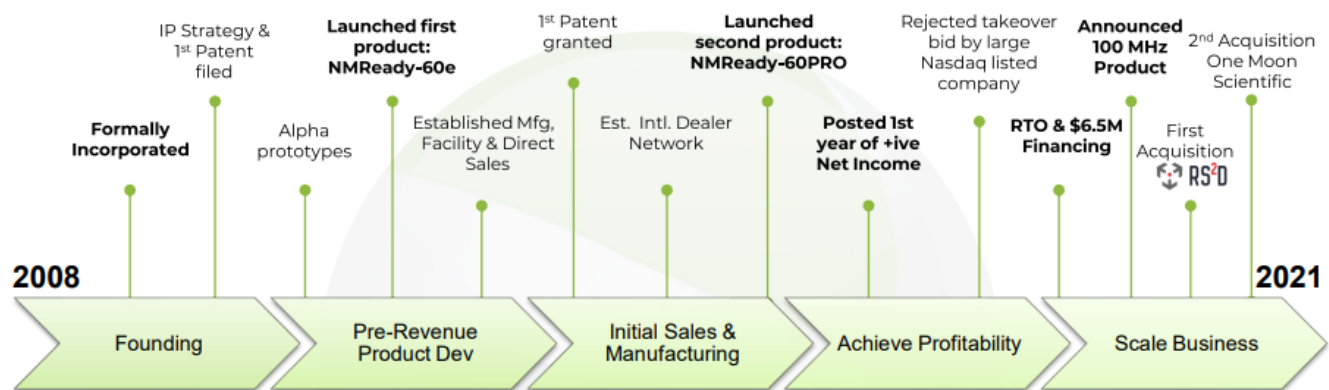
Source: Consensus Data - CapIQ, Chart - FactSet, Historical Data - Company Filings, Forecasts / Estimates - Echelon Capital Markets

Company Overview

Innovative Scientific Technology Company Poised to Disrupt a Large Market

Founded and headquartered in Calgary in 2008, Nanalysis is an innovative scientific technology company that develops, manufactures, and sells compact NMR spectrometers and components for use in scientific and industrial applications (education, oil & gas, chemical, pharma, biotech, food science, cannabis testing, etc.). While the Company primarily competes with one other firm (Magritek, Private) in the ~US\$1B global compact spectrometer market, Nanalysis has the only truly portable benchtop models, the highest performance instrument, and a strong foothold in the North American market. We believe that the technological advances achieved by Nanalysis allow for these compact, affordable, and easy-to-use instruments to acquire an increasingly large share of the global NMR market.

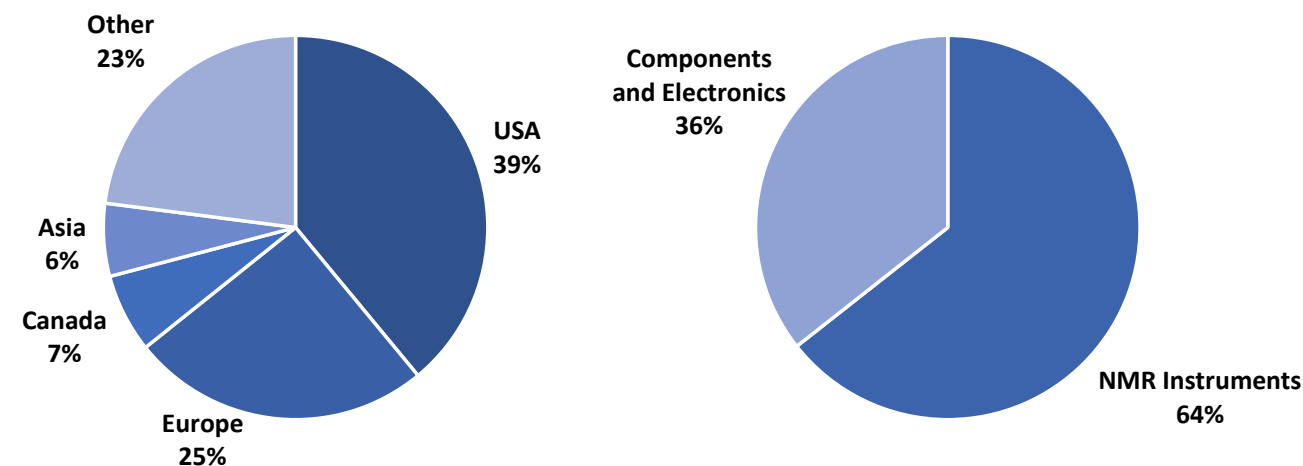
Exhibit 1 – Company Milestones Since Founding in 2008



Source: Company Presentation

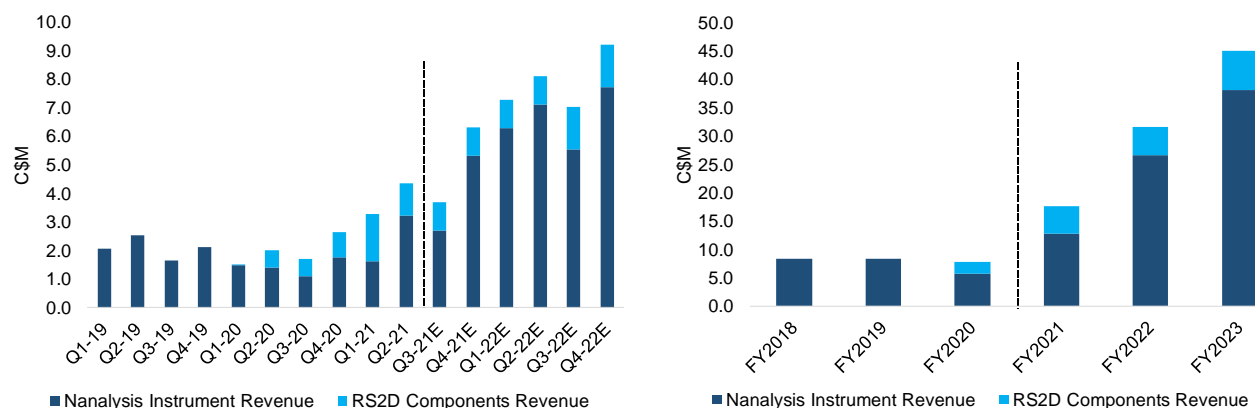
The Company has recorded ~\$8M in revenues for each of the last three years, primarily from product sales and services provided through two reportable segments: Nanalysis Instruments (~64% of Revenue) and RS2D Components and Electronics (36%). The Nanalysis Instruments segment manufactures and sells spectrometers and associated accessories and software, whereas the RS2D Components and Electronics segment designs and manufactures proprietary magnetic resonance products, including MRI and NMR consoles, that are used in the production of the Nanalysis spectrometers and sold for use with traditional, non-benchtop magnet setups supplied by third parties.

Exhibit 2 – Revenue Composition by Geography and Operating Segment (TTM Ending Q221)



Source: Company Filings, ECM

Exhibit 3 – Nanalysis Quarterly and Annual Revenue Projections (ECM)



Source: Company Filings, ECM Estimates

New 100 MHz Instrument Driving Explosive Growth; Orders Already Outpacing Production Capacity

The recent launch of the 100 MHz product suite, the highest performance benchtop instruments on the market, ushers in a new era for the Company as it looks to bring NMR to new potential users that lack access to traditional NMR, leaving them underserved by other analytical methods. In conjunction with quintupling its production capacity over the next year to convert its already mounting backlog of 100 instrument orders, the Company is also partnering with some impressive industry players such as Bosch and Sartec to configure the technology for more arduous applications beyond the stable, controlled labs of academia and biopharma. As can be seen in Exhibit 3 above, 2021 revenues are expected to more than double y/y to ~\$18M, primarily driven by sales of the new 100 MHz instruments.

Exhibit 4 – Nanalysis’ Current Product and Service Portfolio

	Benchtop Products		High Field NMR	MRI
PLATFORM	<p>60 MHz</p> <p>US \$45K-70K since 2013 R&D labs, QA/QC</p>	<p>100 MHz</p> <p>US \$125K-155K since 2019 Better performance</p>	<p>Pulse Console</p> <p>US \$115K since 2019 High-performance, affordable, easy-to-use alternative</p>	<p>MRI Console</p> <p>US \$45K since 2019 High-performance, affordable, easy-to-use modular alternative</p>
ACCESSORIES	<p>Flow Kit US \$7K since 2015</p> <p>Auto sampler US \$13K since 2018</p>	<p>To be released in 2021</p>	<p>Hyperpolarization</p> <p>US \$45K since 2019 sensitivity enhancement</p>	
SERVICE SOFTWARE	<p>OneTouch™</p>		<p>NMRfx Integrated Software for NMR Analysis</p>	<p>PR™</p>
Service	<p>Extended Warranty</p>		<p>Installation & Maintenance</p>	<p>Installation & Maintenance</p>

Source: Company Presentation

Nanalysis' products are developed and manufactured in its facility in Calgary and sold directly in the US, Canada, Germany, Switzerland, and France, with a network of 45 dealers servicing the rest of the world. Over 900 instruments have been shipped to date, primarily to academic labs but increasingly to impressive industrial customers such as Bosch, Dupont (DD-NYSE, NR), and Eli Lilly (LLY-NYSE, NR).

Exhibit 5 – Notable Current Nanalysis Customers



Source: Company Presentation

Benchtop NMR Overview

NMR, the most cited technique in organic and inorganic synthetic research, is one of the most information-rich techniques used by chemists to determine the molecular structure and purity of liquid or dissolved chemical samples. Briefly, molecules in the sample tube are aligned in a magnetic field and its chemical bonds are perturbed by a radio pulse. As the bonds relax back to their magnetically aligned state, the oscillation gives off radio frequency signatures that are recorded by a sensitive detector. These signals are then converted to qualitative and quantitative information about the contents of the sample. This method of analysis has long been regarded as the analytical gold standard but has not been widely adopted outside of academic and pharma labs for three main reasons: traditional NMR instruments are simply too large and heavy for most facilities to house, the technical expertise required for use is too high, and the upfront costs of US\$2M+ and operational costs of \$100K+ per year are prohibitive for most budgets.

Exhibit 6 – Benchtop NMR Instruments are Meaningfully More Practical than Traditional Models



(Not to scale)

Source: UCLA Chemistry Dept., Nanalysis Website

Commercialization of miniaturized NMR platforms has been attempted in the past by some major players in the space, including Bruker (BRKR-NASDAQ, NR) and Thermo Fisher (TMO-NYSE, NR), but never successfully due to their instruments' low performance. Only recent advances in rare-earth permanent magnets and advanced spectral

modelling techniques have allowed researchers to address this compromise and deliver this technology to key new user bases. Benchtop NMR instruments are poised to expand the NMR market into numerous new fields as a result of their affordability, smaller footprints, and the lower technical expertise required for operation. As is often the case for scientific instrumentation, academic labs were the early adopters, but software and hardware advances are leading to wider adoption in private sector industries.

Product Offerings Cover a Wide Range of Use Cases

60e/PRO: The Flagship, Workhorse Benchtop NMR Instruments

The Company's flagship instrument, the 60e, was the first high-resolution 60 MHz benchtop NMR spectrometer to be brought to market in 2013, preceded only by Thermo Fisher's 45 MHz instrument in 2010. The 60PRO, launched by Nanalysis in 2016, has the same field strength and resolving power as the 60e but also supports the analysis of a broader set of nuclei for a wider set of potential applications. This instrument has been well-received and remains on the market as a cost-effective option for users with relatively concentrated samples who do not need greater sensitivity for their analyses.

100e/PRO: Next Generation, Top-performing Benchtop NMR Instruments

In 2019, the Company launched two spectrometers with field strengths of 100 MHz, the 100e and 100PRO, the latter again being the multinuclear option. These are the highest field strength instruments currently on the market, meaning they have greater resolving power and a broader addressable market. This model is claimed to achieve higher resolution than its closest competitor, which operates with a field strength of 90 MHz. Key to the high performance of this instrument is proprietary magnetic alignment and manufacturing processes as well as the RS2D electronics and software that are used to generate a uniform magnetic field stable to nine decimal places.

Exhibit 7 – 100 MHz and 60 MHz Instruments



Source: Nanalysis

RS2D: Components, Electronics, and the Launchpad for the Future MRI Business

In 2020, Nanalysis acquired RS2D and its Cameleon4 technology. This technology powers the 100 MHz models and is the core of the NMR Pulse Console as well as the preclinical MRI product lines that are currently in development. The Pulse Console is a high-performance, affordable, and compact alternative to traditional consoles that can be used to upgrade existing 200-600 MHz magnets from third-party NMR manufacturers.

RS2D has signed a multi-million-dollar OEM and licensing deal with a European corporation to develop the aforementioned miniaturized MRI equipment, with a product expected to be ready for FDA clearance application in the next few years.

Exhibit 8 – RS2D Cameleon4 NMR Console and Pulse and Gecho MRI Consoles



Source: RS2D Website

AUTOsample-60: Queue 25 Samples and Operate from Afar

Certain industrial applications, such as QA/QC, can involve analysis of multiple similar samples, ideally in rapid succession. The AUTOsample-60 is a top-mounting autosampler that allows for painless interconversion between autosampler and manual modes, without adding to the instrument’s footprint. The onboard software manages the data acquisition, processing, and storage which allows for improved throughput and integration of the instrument into a centralized laboratory system. This ability to conduct experiments remotely without having to manually switch out the samples is currently a key selling point for the 60 MHz models, and management expects to launch a similar accessory for the 100 MHz models in 2021.

NMR-Flow: Use NMR to Observe Chemical Reactions Happen in Real-Time

The NMR-Flow turns the benchtop spectrometer into an online NMR detector, either as a stand-alone tool or in conjunction with other analytical techniques. The module sits beside the instrument and directs the flow of a solvent through the magnetic field where the glass sample tube would otherwise sit during analysis.

Besides its use in reaction monitoring, as outlined above, this module has an obvious use case as a detector in column chromatography. Column chromatography is a separation/purification method that separates chemical compounds based on their physical properties as they flow through a solid matrix contained in a column. As the solvent exits the separating column, it passes through a detector to determine the identity of the chemical compound(s) it is carrying. This technique is widely relied upon in industrial chemical synthesis and oil field applications, among others, and an NMR detector has various advantages over the more common detectors (UV-Vis, mass spectrometry etc.) such as its ease of use and ability to detect a wider range of chemical entities (see [Exhibit 15](#)).

Exhibit 9 – The AUTOsample-60 (Left) and the NMR-Flow Module (Right)



Source: Nanalysis (not to scale)

Software Segment De-risks the Top Line, Warranting a Higher Valuation Multiple

All NMR instruments come with the Company’s proprietary OneTouch software, which allows the user to conduct analyses straight out of the box. Nanalysis also offers additional software packages for specific applications such as automation and advanced analytics, as well as an application programmatic interface (API) that allows users to communicate with their spectrometer programmatically. With RS2D, the Company acquired a suite of NMR and MRI software packages including ‘SPINit’, the NMR spectrometer management software required to run experiments on the Company’s Pulse consoles, and ‘PRim’ for managing the preclinical MRI platforms. NMRFX, the cloud-based advanced analytical software packages will soon be available by subscription through the Company’s recently acquired subsidiary, One Moon Scientific (OMS). Recurring revenues generated from the NMR installed base are expected to meaningfully de-risk the top line, warranting a higher valuation multiple as the business scales.

Intellectual Property Provides a Moat Around Unique Miniaturization Technology

Meaningful Patents Provide Protection of Key Technologies Through 2036

Nanalysis’ products are all completely proprietary, with the intellectual property (IP) being protected by three important patents granted in the US and other jurisdictions such as China and Japan, as well as five other countries. The patents listed in [Exhibit 10](#) have 10-15 remaining years prior to expiration and cover the key manufacturing processes and components for creating and maintaining thermally stable magnetic fields to nine decimal places. This is what allows the instruments to generate cleaner data at a higher resolution than competing miniaturized products. The specialized manufacturing techniques and algorithms used in these methods make the instruments near-impossible to reverse-engineer.

Exhibit 10 – Patents Protecting the Keys to Compact NMR System Development

US Patent Office Number	Patent Title	Patent Expiration
US 8,712,706 B2	Method and apparatus for producing homogeneous magnetic fields	Dec-31
US 9,341,690 B2	Pole piece	Mar-34
US 9,952,294 B2	Lattice configurations of polyhedral component magnets	Mar-36

Source: Nanalysis, Google Patents

Trade Secrets and Manufacturing Know-How Prevent Successful Competition

The magnetic hardware at the heart of the instrument is controlled by electrical boards and other firmware that are all designed by in-house specialists and assembled in the Calgary and Strasbourg manufacturing plants. By sourcing only basic components from vendors, with no customization done outside of their own facilities, the Company keeps a tight grip on all IP to further prevent competitors from poaching the trade secrets that allow the instruments to outperform the competition.

Acquisition History – Bolt-on Acquisitions for a Complete Magnetic Resonance Company

In addition to the Company's industry leading innovation, it has also closed small, strategic acquisitions of complementary technologies and software platforms to enhance its technological leadership and/or layer on additional capabilities that will improve its competitive position and broaden its market opportunity.

Exhibit 11 – Nanalysis' M&A Track Record

Date	Target	Consideration (C\$)	Deal Multiples		Product/Service Offerings	Pre-Acquisition (C\$)	
			TTM EV/Sales	TTM EV/EBITDA		TTM Revenue	TTM EBITDA
Jul 2021	One Moon Scientific (OMS)	\$0.6M	NA	NA	MR data processing and analysis software, including machine learning and database construction/search algorithms	NA	NA
Mar 2020	RS2D	\$4.0M	1.3x	NA	Next-gen NMR and MRI electronics	\$3.1M	NA

Source: Press Releases, ECM

RS2D: Electronics for NMR Instruments and Other Future Magnetic Resonance Applications

In Q120, Nanalysis acquired France-based RS2D in a stock and cash deal for a total consideration of approximately €3.2M (~1.3x TTM sales). RS2D generated over €2.5M in revenues per year between 2017 and 2019 supplying next-gen electronics for NMR and MRI systems. This deal diversified Nanalysis' revenue base with the addition of an OEM electronics stream, while also deepening the Company's roots in Europe and improving the technology platforms of existing and future Nanalysis products. Cameleon4, the core of RS2D's Pulse Console (200-600 MHz) and MRI product lines, enables low-field, high-field and MRI applications and is the platform on which the Company's future MRI business will be built. The Pulse Console is the world's most compact high-field NMR console, designed to replace other manufacturers' consoles and integrate with their superconducting magnets to provide the user superior use of the hardware at a lower price point.

The ~\$4M cash and stock deal for RS2D has already proven fruitful with the signing of a magnetic resonance technology OEM and licensing deal with Switzerland-based QUAD Systems, a privately held provisioner of traditional and custom high-field NMR systems and components. The deal included an initial payment of ~\$1M in Q121, and a further \$2M in milestone payments over the next three years. Nanalysis retains the IP and branding rights on the technology and, depending on the success of the venture, there is potential for OEM sales to this partner in subsequent years an order of magnitude larger than the milestone payments.

One Moon Scientific: Recurring Revenue SaaS Platform Facilitates Adoption in New Industry Verticals

The most recent acquisition was that of New York-based OMS for US\$625K in July 2021. The company's NMRfx software platform was developed in a leading pharmaceutical company and offers a suite of premium software tools to provide routine, high-performance data processing and fill niches in MR data analysis, including machine learning and database construction/search algorithms. The licensing and SaaS revenues derived from this platform will smooth and de-risk the Company's top line going forward, while also potentiating more complex analyses in fields such as food authentication and biological diagnostic technologies.

Prior to the acquisition, OMS had limited revenue but had over 1,800 academic users and was cash flow positive due to a series of grants that were set to fund the company for the next four years. The acquisition of OMS by Nanalysis allows for significant operational synergies as the software will be downloadable on the currently installed base of 900+ instruments and sold alongside future NMR and MRI offerings. While the Company has not yet provided details on pricing, comparable software platforms can cost upwards of US\$10,000 per year for single-user licenses and can be discounted for enterprise deals. It is also machine agnostic, meaning it can be sold to users of other benchtop and high-field NMR platforms.

US\$275K of the base consideration was paid in cash while the other US\$350K was paid with four promissory notes that are each convertible by Nanalysis to either cash or shares. Depending on future revenue growth, the former shareholders of OMS may also receive earn-outs over the next three years.

NMR Spectroscopy – A Primer on the Gold Standard of Chemical Analysis

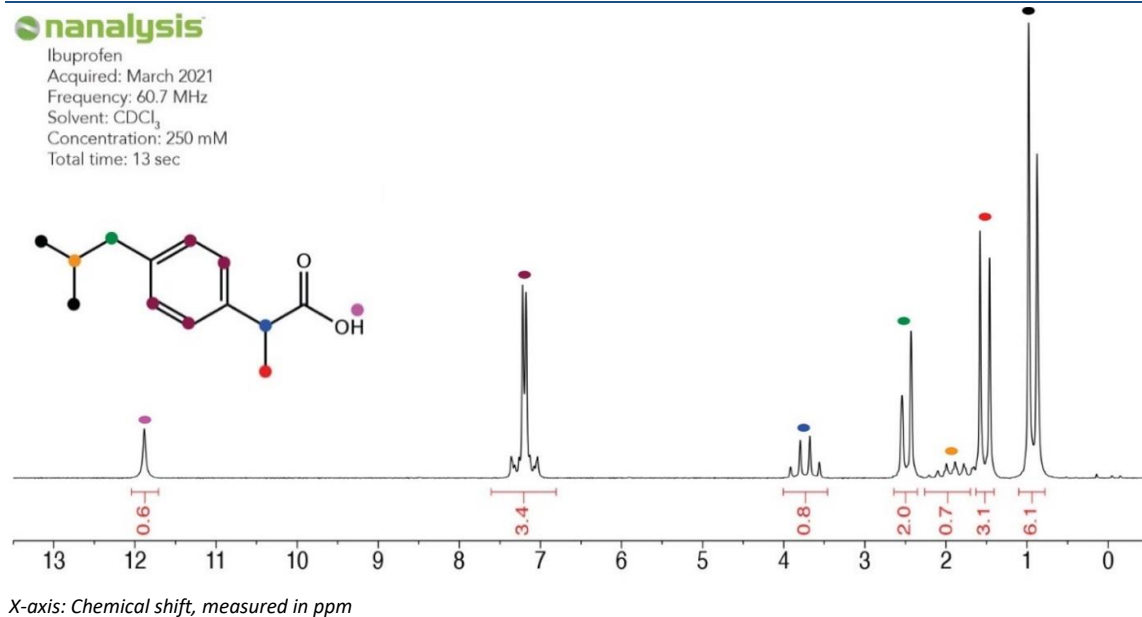
NMR spectroscopy is an analytical chemistry technique used to determine which functional groups (C-H, C=O, O-H etc.) are present on an isolated molecule dissolved in a solvent.

For the purpose of this report, there are two broad categories into which NMR instruments can generally be classified:

- Superconducting NMR spectrometers – high-field, high-resolution (300 MHz and up), and
- Benchtop NMR spectrometers – low-field, medium-resolution (40-300 MHz).

The sample molecules are aligned in a static magnetic field and the molecule's chemical bonds are perturbed using radio waves. The oscillating frequency of these chemical bonds as they relax towards equilibrium is detected with sensitive radio receivers and displayed on the NMR spectrum as a peak at that frequency on the x-axis. Stronger chemical bonds such as the O-H bond (light purple) in the figure below oscillate at higher frequencies than the weaker C-H bonds (black). The area under the curve of the peak is indicative of the relative number of those chemical bonds present in the molecule.

Exhibit 12 – An Example of an NMR Spectrum for an Ibuprofen Sample



Source: Nanalysis Spectral Library

Advanced Spectral Interpretation Software and Reference Databases Facilitate Non-Expert Use

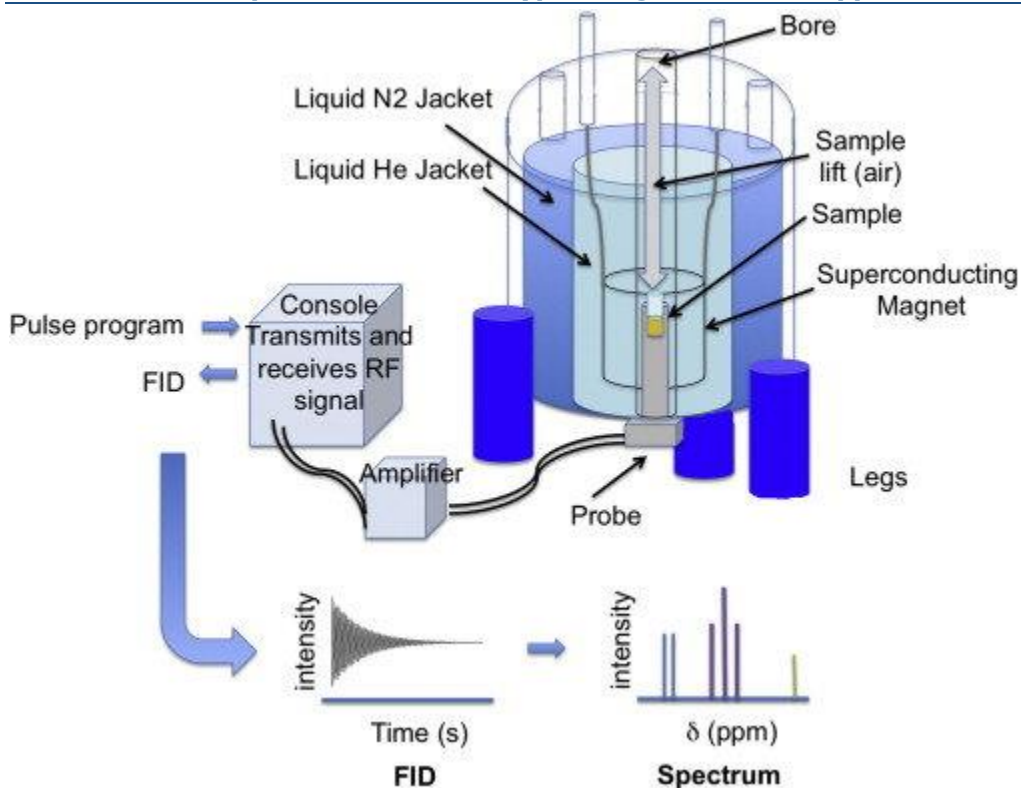
The shapes (singlet, doublet, triplet, etc.) and integrated area under the peaks provide information regarding the structure of a molecule and its individual functional groups. For example, the doublet peak with an integration of ~6 at ~1 ppm in [Exhibit 12](#) above indicates that there are six hydrogen atoms bound to a carbon atom that is adjacent to another carbon atom with one hydrogen bound to it. The quartet peak with an integration of ~1 at ~3.75 ppm indicates that there is one hydrogen atom bound to a carbon atom adjacent to another carbon atom with three hydrogens bound to it. One of Nanalysis' value propositions is that the NMR instrument software provides non-expert users with quantitative and qualitative output without manual interpretation.

Reference spectra of hundreds of chemical structures and compounds are stored in large databases and can be matched to the spectrum derived from an unknown sample of interest, like a fingerprint, to determine the identity of the sample. For many applications, this is much quicker than the user elucidating it manually.

The Old Guard: High-Field Instruments Have Seen Little Meaningful Innovation in Decades

The larger and more complex the molecule, the quicker the relaxation of the perturbed chemical bonds and the smaller and broader the peaks. A large molecule's chemical bonds can oscillate at similar frequencies and the resultant peaks can be very close together (or overlap) in a weaker magnetic field, rendering molecular structures more difficult to decipher. Large molecular structures require very strong magnetic fields to maintain the tension in the individual molecules while individual chemical bonds oscillate. These high-field instruments are very large and expensive to purchase and maintain. Dedicated, trained staff are required to operate them, and expensive cryogenics (liquid helium and nitrogen) are required to keep the superconducting magnets cool as they operate. These instruments are generally only economical if purchased and operated by universities or central facilities with usage shared across many users for analysis of simple and complex molecules alike.

Exhibit 13 – Example Schematic of a Typical High-field NMR Apparatus



Source: *Journal of Atherosclerosis*

The Keys to Unlock New Markets: Low-field Instruments that can Go Anywhere

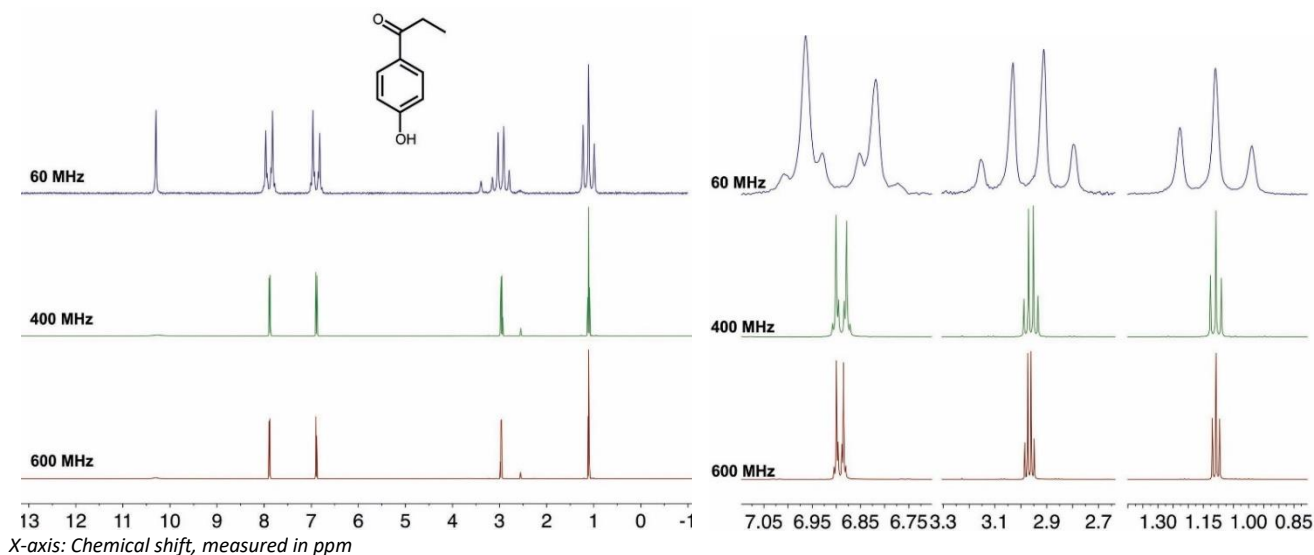
Major developments in rare-earth permanent magnets in recent years have allowed for the production of small, lightweight NMR systems that provide stable, homogeneous magnetic fields in the 40-200 MHz range without the use of superconducting magnets and cryogenics. Similarly, spectral modelling and analysis software has simplified the analytical workflow and further reduced the barriers to benchtop NMR use for less technically trained users.

While the user gains useability, portability and floor space with a benchtop instrument, compromises are made on spectral resolution and cleanliness. Most applications outside of cutting-edge R&D, however, do not require the resolution offered by high-field instruments. For example, a less costly 100 MHz instrument has traditionally not been suitable for *de novo* deduction of complex polypeptide structures but has been shown to be suitable for the analysis of

small molecule drugs, polymers, and petrochemicals. Conversely, reliance on a high-field instrument for routine analysis of simple samples is analogous to relying on a supercomputer solely for simple word processing applications.

If the user has a relatively clean sample and an idea of what peaks they are looking for, a lower-resolution instrument generally suffices. While Nanalysis' benchtop instruments are not intended to replace the traditional high-field instrument base, they are designed to supplement them as a quicker and easier option for use when higher resolution is not required. [Exhibit 14](#) below shows how the increased field strength allows the peaks to be narrower while displaying the same pattern, centred around the same chemical shift (x-axis). The recently acquired NMRfx software allows low-field NMR instruments to leverage high-field spectral databases to analyze more complex molecules using the advanced spectral matching techniques previously discussed.

Exhibit 14 – NMR Spectrum of 4-hydroxypropiophenone Acquired at Different Field Strengths



Source: Nanalysis Spectral Library

Despite Analytical Advantages, More Accessible Techniques see Wider Adoption in Industry

Despite being the most commonly cited technique in organic and inorganic synthetic research, NMR is not yet as widely adopted in industry as other methods due to the spatial and economical limitations of the traditional high-field instruments. In many cases, benchtop NMR could either replace or complement other existing analytical techniques as it addresses the main disadvantages listed in [Exhibit 15](#) below. NMR sample preparation is simple, and the experiment is non-destructive, allowing the user to recover samples after analysis.

Exhibit 15 – Comparison of NMR and Other Chemical Analysis Techniques

Analytical Method	Primary Applications	Advantages	Disadvantages
Traditional NMR	Biopharma R&D Synthetic chemistry Food analysis QA/QC	Highly sensitive Full structural characterization Quantitative without calibration Sample not destroyed in analysis	Traditional NMR not easily accessible High operational costs Specific technical expertise required Not automatable
Infrared Spectroscopy (IR)	Synthetic chemistry QA/QC	Well established, easy to use Compound spectra libraries available Instrumentation is highly accessible Low operational costs	Not quantitative Not automatable
Mass Spectrometry (MS)	Biopharma R&D Synthetic chemistry Food analysis QA/QC	Highly sensitive Some structural characterization Automatable Only small volumes needed for analysis Quantitative with calibration	Requires sample molecules to be ionizable Specific technical expertise required Instruments can be fragile Sample destroyed in analysis High operational costs
Ultra-violet Spectroscopy (UV-Vis)	Synthetic chemistry QA/QC	Sample not destroyed in analysis Quantitative with calibration	No structural characterization Low operational costs

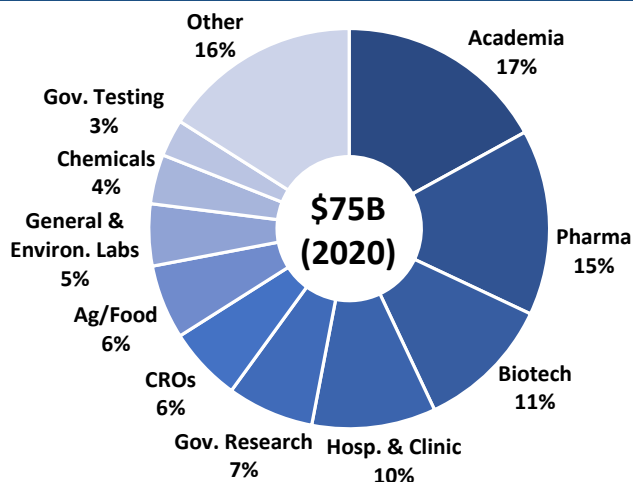
Source: ECM

NMR Industry Overview

A Large, Growing Industry Diversified Across Private and Public Markets

The scientific instrument market was valued at ~US\$75B in 2020, growing at a CAGR of over 5% per year. In the modern world, analytical testing is a critical yet often unheralded step in many of the endeavours that propel society forward. For example, analytical instruments are used along the entire healthcare spectrum – from cutting-edge research and development of new therapies to diagnostic testing of patient samples and routine QA/QC of generic drugs that have been on the market for decades. In the oil & gas industry, QA/QC ensure that industry standards, regulations, and guidelines are met for virtually every chemical element of a project.

Exhibit 16 – The Scientific Instrument Market

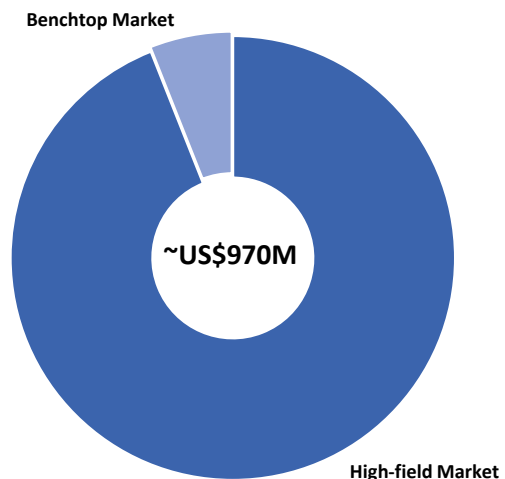


Source: Nanalysis Investor Presentation, Echelon

Miniaturized Instruments’ Current Market Growth Outpacing that of High-field NMR

According to a recent global assessment report by SDi, ~US\$970M will be spent on NMR testing equipment in 2021, with this market growing at an ~5% CAGR. While the market is dominated by the more expensive ultra-high (US\$5M+/instrument) and high-field (US\$1M+) instruments, which represent over 90% of the market, the benchtop segment (less than 10% share) is growing significantly faster (50%+) and has meaningful further opportunities to expand the overall market as the smaller, less costly instruments open up new applications for NMR.

Exhibit 17 – Benchtop NMR is Estimated to be <10% of the Current NMR Market Spend

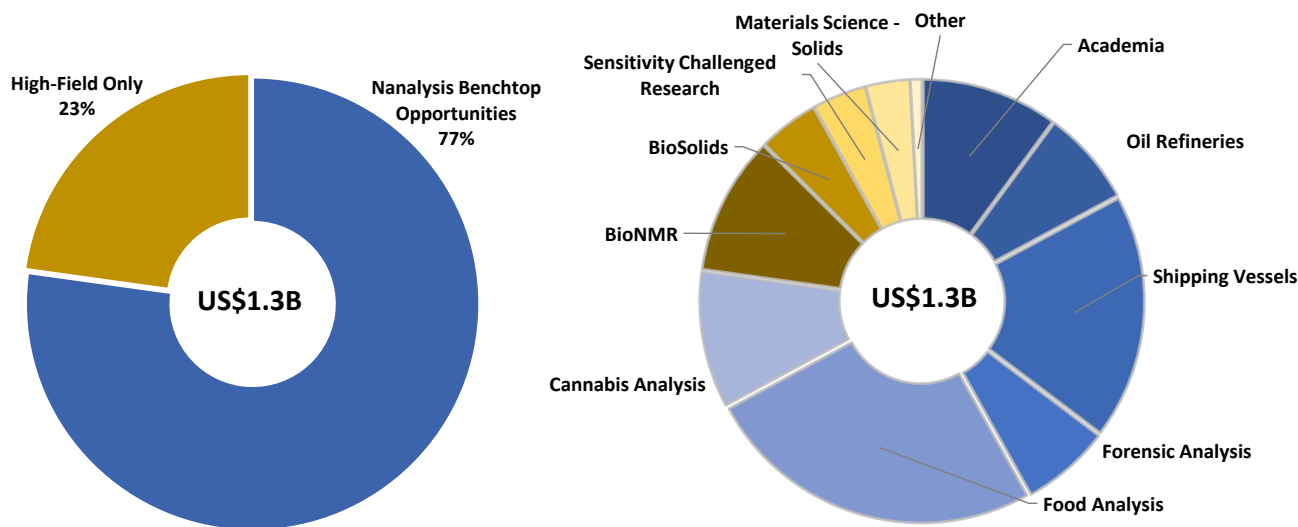


Source: SDi Market Reports, Echelon

Benchtop TAM of ~US\$1.3B is Driven by New Industry Verticals and Applications

Using a bottom-up approach, we estimate Nanalysis’ total addressable market (TAM) for benchtop NMR to be ~US\$1.0B. This includes an ~US\$600M TAM that is currently serviceable using both benchtop and high-field NMR (academia, food analysis & cannabis) and an ~US\$400M TAM of new industry verticals and applications that can only be unlocked by portable benchtop instruments (oil refineries, shipping vessels & mobile forensic analysis). These applications, which we cover in more detail in the following section, comprise ~77% of the ~US\$1.3B total addressable NMR market, with the balance representing applications that are serviceable only by traditional, high-field instruments (large biomolecules, biosolids, sensitivity challenged research & solid materials sciences). Furthermore, this estimate of Nanalysis’ market opportunity excludes the ~\$8B global medical MRI market, for which the Company is also developing portable instruments and that we will also examine in greater detail in a later section (see page 23).

Exhibit 18 – Benchtop and High-field NMR Total Addressable Markets



Source: SDI Market Reports, Thermo Fisher, Echelon

Industry Growth Drivers

Standard Operating Procedures Validate New Technologies and Instill Confidence

An obvious barrier to entry for any new technology is users’ reluctance to adopt what they perceive to be unproven methods, especially when there is already an established method and/or the margin for error in the analysis is slim. As such, analytical labs often rely on a ‘stamp of approval’ in the form of third-party publications of standard operating procedures (SOPs) before committing to investing in an instrument, meaning new instruments are generally adopted first in government and academic labs for research purposes. Continued citation of benchtop instruments in academic publications validates their use case and drives adoption by other users beyond academia and government.

Partnerships to Configure Instruments for New, Previously Unfeasible Applications

Traditional high-field NMR instruments have a limited list of applications as the instruments have so far been adopted almost exclusively in academia, centralized labs, and large pharmaceutical companies. Benchtop instruments extend the accessibility and availability of NMR to institutions that lack access to high-field instruments as well as to certain existing high-field instrument users who could benefit from the simplified workflows and reaction monitoring functionalities of the benchtop instruments. Nanalysis is currently collaborating with impressive industry partners with existing client relationships and distribution networks to configure instruments for specific, field-based industry uses to reach even more new potential NMR users that are currently underserved by other analytical methods (see [Exhibit 19](#)).

Exhibit 19 – Select Applications in the Potential Global Benchtop NMR Market

Market	Market Size (US\$M)	Market Application	Nanalysis Partner	Purpose of Partnership	Partnership Announced
Oil Refineries	91	Testing refinery feedstocks for impurities prior to being shipped for other uses	Sartec	Enhancements to Nanalysis devices that will specialize units for feedstock analysis	Jan-20
Shipping Vessels	234	Regular testing of low-sulphur fuels to avoid regulatory fines and identify impurities that can cause costly engine damage and downtime	Bosch	Enhancements to Nanalysis devices that will specialize units for fuel analysis	Oct-19
Forensic Analysis	85	Identification of common and novel illicit substances in both mobile and fixed forensic labs	German LKA	Development of SOPs and enhancements to Nanalysis devices that will specialize units for mobile drug analysis	Dec-19
Food Analysis	325	Food composition analysis and detection of food fraud – the dilution, substitution, counterfeiting or mislabelling of consumer food products	SupraRnD	Distribution and development of standard operating procedures for food analysis using the standard Nanalysis devices	May-19
Cannabis Analysis	130	Rapid cannabinoid profiling of cannabis products for both regulator and consumer awareness	SupraRnD	Distribution and development of standard operating procedures for cannabis analysis using the standard Nanalysis devices	May-19
Academia	130	Hands-on, guided teaching of NMR to undergraduate students as well as research use by graduate students	NA	NA	NA
Total	995				

Source: ECM

Lack of Practical NMR Access Leaves Post-Secondary Students Underserved

The introduction of benchtop NMR instruments in undergraduate labs would facilitate more robust instruction of analytical chemistry course materials and divert traffic away from the high-field instruments, freeing them up for graduate students for use in their research. University students in natural sciences programs learn the principles of NMR analysis as this is one of the most useful tools in academic chemical research. Due to the high operating costs and low throughput nature of the legacy high-field instruments, however, students generally forego the opportunity to gain hands-on experience with the technique at the undergraduate level. While the students learn the theory in lectures, lab-based classes are developed around compounds that can be synthesized and analyzed with more readily available methods such as infrared (IR) spectroscopy and gas chromatography-mass spectrometry (GC-MS). As a result, students often do not acquire the same level of understanding of NMR as they do for other analytical techniques, despite it being more heavily relied upon at the graduate level. Assuming 500 academic institutions with appropriately funded chemistry departments across the globe, US\$65K per instrument, and four instruments per institution for teaching and research use, the global academic industry represents a US\$130M market.

Sartec Partnership: Streamlining Oil & Gas Feedstock Analysis

One of the most promising verticals for Nanalysis is the oil & gas refineries. Refinery feedstocks (products derived from crude oil destined for further processing) need to be tested for impurities prior to being shipped for other uses. NMR serves as an ideal tool for this analysis and, indeed, is already being used. Shipping the samples off to a centralized lab for high-field NMR analysis, however, has a turn-around time of up to two weeks and can be very expensive, both in terms of direct costs and the indirect costs of storing the product and delaying operations while waiting for the NMR results. Our discussions with benchtop NMR users indicate that the 60PRO instruments are the most cost-effective tools to expedite the analysis of fuel samples. For only ~US\$60-70K per instrument, users get resolution suitable for the task and the ability to quantify the phosphorus content of the samples. The instruments can be placed on-site at the refineries and the analyses can be easily automated by technicians without advanced analytical chemistry degrees.

According to the *Oil and Gas Journal*, there were ~700 oil refineries globally in 2020, with ~135 operating in the US and ~17 in Canada. Assuming US\$65K per instrument and two instruments per site to analyze the various fractions, the oil refineries represent a US\$91M market.

Bosch Partnership: Shipping Vessels Face Unique, New Fuel Analysis Challenges

Environmental regulations pertaining to shipping vessel fuels have become increasingly stringent in recent years. With the International Maritime Organization introducing regulations in 2020 to cut the sulphur content of fuels by 85%, ship owners shoulder the burden of switching to new fuel sources and testing their sulphur contents themselves. The low-sulphur fuels that were adopted by the shipping industry in response to this regulation often result in higher levels of emission of other pollutants and increase the risk of engine failure. As such, both the vessels and the suppliers of the new fuels are incentivized to conduct regular testing of their fuels both on shore and at sea in order to avoid regulatory fines as well as costly engine damage and downtime. Indeed, Veritas Petroleum Services (Private) noted a 100% increase in the number of fuel quality alerts in 2020 as a result of this shift.

Bosch and Nanalysis are collaborating to configure the NMR instruments for use aboard the vessels, which would require the instrument to be able to withstand the heat and oscillation of the engine rooms. If/when this is achieved, Bosch will help scale production to serve the shipping vessels and port locations where the vessels' tanks are filled, effectively opening this market to NMR.

Approximately 3,600 shipping vessels reportedly emit pollutants above the permitted limit, making them immediately susceptible to regulatory fines and/or engine damage upon switching fuels. As such, we estimate the addressable market for these vessels alone to be at least US\$235M, assuming US\$65K per instrument and one instrument per vessel. With ~60,000 vessels currently ocean-bound, the Company's opportunity in this vertical could be much larger if benchtop NMR becomes the standard for general fuel analysis aboard shipping vessels.

Consolidating QA/QC Tests in the Energy Space

High-field NMR has proven to be a capable tool for analysis of petroleum products but has not been widely adopted for use by oil refineries due to its high costs. Petroleum characterization of pre-distilled crude fractions is currently achieved with multiple traditional chemical analysis methods that are often time-consuming and require a large sample and solvent amounts. These methods can be equally as inconvenient and inefficient as high-field NMR but can be much less costly. Benchtop NMR can be useful in combining numerous tests into one, analyzing aromatic content, hydrogen content, ethanol content, etc. quickly and non-destructively.

German Law Enforcement Partnership: "Lab on Four Wheels" for Mobile Substance Analysis

Forensic labs have traditionally used gas chromatography and mass spectrometry, along with established spectral databases of known chemical structures, to identify illicit compounds that are circulating on the streets or being intercepted at the border. This method, however, is not yet portable and is inadequate for the identification of new drugs and analogues that cannot be easily identified without a known standard. While high-field NMR is technically capable of identifying novel illegal narcotics, the accessibility, affordability, and size of these large machines prevent on-site application of the technology.

In addition to the NMR instruments' ability to identify novel compounds, the Company has partnered with the LKA, an independent German law enforcement agency, to construct a database of NMR spectra of known drugs and cutting agents that can be referenced when a sample is being tested using the portable NMR instruments. This will increase test accuracy and reduce the time to identify both common suspicious substances and their novel analogues in the LKA's "lab on four wheels". The project's methodology and results will be published to serve as a template or SOP for other organizations to follow.

Assuming 260 major global cities, US\$65K per instrument and five instruments per city, this represents an US\$85M global market opportunity.

Food Authentication and the Detection of Food Fraud

Food authentication is the most common use of NMR in food science due to the significant economic and health consequences of food fraud – the dilution, substitution, counterfeiting or mislabelling of consumer food products. The obvious incentives for producers to ensure the quality and authenticity of their products guarantee a high level of sustained demand for the testing industry, especially in the case of high-priced items such as wines and olive oils. Benchtop NMR presents itself as an opportunity to improve the analytical workflow. As is the case with the cannabis testing industry, benchtop NMR can be used to analyze multiple sample types that previously would have required the use of multiple analytical instruments and methodologies.

According to *Food Safety News*, there are ~5,000 accredited food safety testing labs along with ~20,000 unaccredited. Using a US\$65K instrument, we estimate the benchtop NMR market for the accredited US food testing industry to be ~US\$325M if each lab has one instrument.

Replacing Multiple Instruments in the Vast Cannabis Testing Market

With safety and quality regulations in jurisdictions that have legalized cannabis, cannabis testing has blossomed to a ~US\$1.2B market in 2020 and is expected to exhibit a 12% CAGR through 2026, according to a 2021 Market Data Forecast report. A recent paper in the scientific journal *Analytical Methods* showed that a single 60PRO instrument has the analytical abilities to replace multiple chromatography-mass spectrometry instruments and methodologies that are currently used by testing labs to conduct the three main cannabis analyses: cannabinoid potency, terpene profiling, and heavy metal analysis. Chromatography-mass spectrometry setups, like high-field NMR instruments, require a specific set of expertise to operate and maintain and can be costly to run due to high consumables costs.

There are ~150 licensed cannabis testing labs in Canada and, assuming ~900 labs in the US, each with two 60PRO instruments, we estimate the North American benchtop NMR cannabis testing market to be ~US\$135M.

SupraRnD: Distribution Partner also Using Instruments for Food & Supplement Analysis

Canada-based SupraRnD (Private) is an official distributor of Nanalysis' existing products that also uses the 60e instruments in its food, cannabis, and botanical supplement testing business. SupraRnD provides chemical analysis services to detect food fraud in high-value food products such as wine, botanical based medicines, natural health products, olive oils, and dietary supplements. SupraRnD has also entered the cannabis analysis space and has a track record of collaborating with scientific technology companies to commercialize its products, making it an ideal partner for Nanalysis. With experience as both a user and distributor of the instruments, SupraRnD provides valuable input for Nanalysis' research and development efforts. In addition, having a partner such as SupraRnD to develop and publish its research methods and protocols demonstrates the utility of the instruments, adds credibility, and inspires confidence in potential adopters of the technology.

Decentralized NMR Accelerates Production for Small- and Medium-Sized Chemical Companies

High-resolution benchtop NMR instruments, at approximately half the initial cost and only a fraction of the operating cost of a lower-end high-field instrument, could serve as an optimal solution for a wide range of underserved chemical suppliers of all sizes. These companies typically require NMR analysis in order to confirm the identity and purity of their final chemical product. For small- and medium-sized companies, a dedicated NMR facility on-site is generally uneconomical as the upfront and operating costs of such a facility are simply too high. As a result, sample analysis is usually outsourced to a centralized lab on a costly fee-for-service basis where turnaround time can exceed a week and, if the sample analysis returns negative results, there may not be much the company can do to rectify the situation. This has been a necessary cost of doing business in the past.

The Pharmaceutical Industry Benefits from Expanded Access to NMR

NMR spectroscopy is widely used in the pharmaceutical industry to identify new compounds, assess purity, and characterize and optimize chemical reactions. Routine use of traditional NMR for quantitative analysis is less common, largely due to the inaccessibility of the instrumentation. Benchtop instruments extend the use of NMR Spectroscopy to smaller pharmaceutical companies and provide an easy-to-use, compact, and automatable alternative to allow

quantitative NMR to be incorporated directly in the labs. The workflow can also be very simple – once the method is developed and validated, results can be quickly obtained, with no requirement for a specialist to run the sample or evaluate the data. This avoids the need to ship the sample to a molecular services firm for analysis, which can be costly, inconvenient, and pointless if the sample rapidly degrades. In addition, significant IP risk is introduced when involving other firms in the analysis process.

Streamlined Sample QA/QC an Obvious Use Case in Advanced NMR Facilities

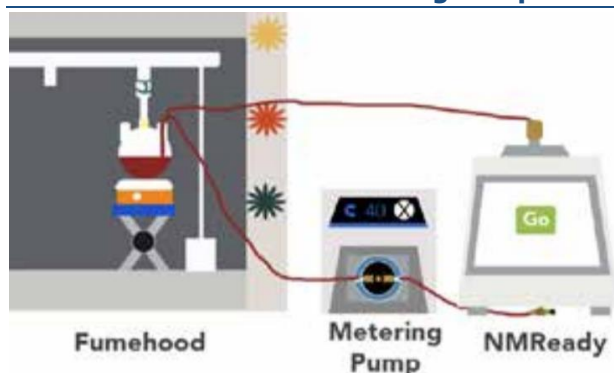
Supply and demand can strain even the most advanced and well-equipped NMR facilities. Users often outnumber instruments, and the instrument queues can be long enough to impede efficient R&D. Quickly checking the sample quality of the entire queue of samples on a benchtop instrument equipped with an autosampler allows labs to identify and remove duds prior to analysis with the more congested high-field instruments.

Reaction Monitoring to Optimize Chemical Synthesis in Manufacturing and Advanced R&D

Chemical synthesis often involves reaction monitoring to observe the completeness of the reaction. If the researcher requires NMR analysis to achieve this, analysis on a high-field instrument can be a time-consuming and cumbersome start-and-stop process. High-field instruments are simply too large to configure with an ongoing reaction.

Many of the benchtop NMR instruments currently on the market offer real-time reaction monitoring to optimize chemical synthesis protocols. The liquid sample is pumped from the reaction flask, through the magnetic field in the centre of the instrument where it is analyzed, and back into the reaction flask to continue the reaction. The instrument cycles through scans to analyze the content of the sample as it circulates through the system. As the reaction progresses, the NMR output should show a gradual reduction in the peak areas arising from the presence of the initial reagents, and a simultaneous increase in the peak areas that indicate the presence of the target molecule.

Exhibit 20 – Reaction Monitoring Setup with an NMR Instrument



Note that the 60 & 100 MHz instruments used to be branded as NMRReady-60 and NMRReady-100

Source: Nanalysis Website

Competition

Early Movers Moved Too Soon

The high-field NMR market is dominated by Bruker and JEOL (6951-TSE, NR), with some Oxford (OXIG-LSE, NR), Agilent (A-NYSE, NR), and legacy Varian (acquired by Agilent) instruments also in the field. Bruker has attempted to leverage its existing high-field NMR base and ubiquitous TopSpin NMR software to provide users with a workable benchtop solution but has not yet had any meaningful success. Thermo Fisher's products and services are even more ubiquitous in both scientific and industrial labs; however, it has not established a lasting presence in either high-field or benchtop NMR. Arguably, these two behemoths made their attempts to commercialize benchtop instruments before the technology was advanced and robust enough for broad adoption. This lack of success may have dissuaded large peers from making similar investments for years, allowing start-ups such as Nanalysis to enter with better software and more sophisticated components and manufacturing techniques.

Exhibit 21 – Benchtop NMR Instrument Landscape

Manufacturer	Instrument	Release Year	Field Strength (MHz)	Resolution (Hz)	Sensitivity (S/N)	Touchscreen Interface	Weight (kg)	Autosampler	Cloud Output	Nuclei	Price
Nanalysis	NMReady-100PRO	2020	100	< 1.0	220	Yes	97	Yes	Yes	1H, 13C, 19F, 31P	US\$125,000 to
	NMReady-100e	2019	100	< 1.0	220	Yes	97	Yes	Yes	1H	US\$155,000
	NMReady-60PRO	2015	60	≤ 1.0	100	Yes	20	Yes	Yes	1H, 13C, 19F, 31P	US\$45,000 to
	NMReady-60e	2013	60	≤ 1.0	100	Yes	20	Yes	Yes	1H	US\$70,000
Magritek	Spinsolve 90	2020	90	< 1.0	> 200	No	115	Yes	No	1H, 13C 19F, 129Xe	US\$45,000 to US\$125,000+
	Spinsolve 80	2017	80	0.5	> 200	No	73	Yes	No	1H, 13C, 19F, 31P	
	Spinsolve 60	2016	60	< 0.5	120	No	60	Yes	No	1H, 13C, 19F, 31P	
Bruker	Fourier 80	2020	80	< 0.5	> 1,500	No	94	No	No	1H, 13C, 31P, 129Xe	US\$45,000 to US\$70,000
	Fourier 60	2013	60	< 1.0	> 500	No	145	No	No	1H, 13C, 19F	Discontinued
Thermo Fisher	picoSpin 80	2013	80	< 1.6	> 4,000	No	19	No	No	1H, 19F	US\$25,000 to
	picoSpin 45	2010	45	< 1.8	> 1,000	No	5	No	No	1H, 19F	US\$50,000
Oxford	X-pulse	2019	60	< 0.35	120	No	171	No	No	1H, 13C 19F, 29Si, 11B, 7Li	US\$70,000 to US\$80,000

Note that resolution is measured in Hz and a lower number confers higher resolution

Source: Phytochemical Analysis, (2020), Frost & Sullivan (2016), ECM

While there is competition from multiple vendors, Nanalysis and Magritek appear to be the two strongest competitors with the majority of the market share between them. Indeed, in our discussions with benchtop NMR users in pharma, energy, and academia, these are the only two names that are consistently mentioned as the two contenders when deciding which instrument to purchase.

Magritek

Nanalysis' main competitor is Magritek, a private company based in New Zealand that currently offers 60, 80 and 90 MHz instruments and has a strong foothold in the European market. The company has a strong brand and has historically commanded premium prices for its instruments as an early innovator in the industry. Despite employing the same magnetic materials in its instruments as Nanalysis, Magritek has not been able to achieve a field strength of 100 MHz and while its offerings are similarly powerful, they are in some circles as lacking portability as they are operated using a separate computer station that adds to the instrument's footprint and are not able to upload spectra to the cloud directly from the instrument, as outlined in [Exhibit 21](#) above. Users that we have spoken to have cited the latter as a key point of differentiation and a reason to purchase a Nanalysis instrument ahead of Magritek.

In March 2021, Ampersand Capital Partners announced a minority investment in Magritek. Ampersand is a middle market private equity firm with more than US\$2B of assets under management (AUM) dedicated to growth-oriented investments in the healthcare sector. In addition, Rangatira Investments, a New Zealand-based fund (\$200M in AUM) that invests in New Zealand companies owns ~27% of Magritek. We highlight these investors as, given their profiles,

we would not be surprised if they were to look for an opportunity to exit their positions in the next three to five years, implying a potential sale to a larger player or a go-public transaction.

Bruker

In 2013, Bruker launched its 60 MHz Fourier 60 instrument in what was another example of a large scientific instrument provider, in this case one of the leaders in the NMR space, bringing a benchtop NMR platform to market but never finding meaningful purchase. Weighing in at 145kg, without considering the separate computer required for operation, it was never a true benchtop instrument and was discontinued a few years later. The 80 MHz Fourier 80 was released by Bruker late in 2020 and, despite the impressive specifications in the brochures, users are reporting very limited success in extracting an adequate level of performance from the instrument thus far.

Thermo Fisher/picoSpin

picoSpin launched its first benchtop NMR spectrometer in 2010 – a 45 MHz instrument that won a handful of R&D industry awards before the company and its IP were acquired by Thermo Fisher. Thermo Fisher then released the picoSpin-80™, an 80 MHz instrument, in 2013. Despite Thermo Fisher’s seal of approval and the industry accolades, neither instrument was user-friendly enough for wide adoption by non-NMR experts. With line widths of ~1.8 and ~1.6 Hz, neither the 45 MHz nor the 80 MHz picoSpin instruments had the bandwidth required for cutting-edge research and the lack of an autosampler precluded them from any high throughput industrial uses such as QA/QC.

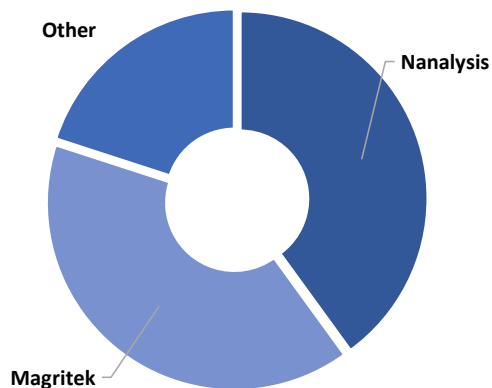
Oxford Instruments

Similar to Bruker, Oxford Instruments had launched a low-field (20 MHz) instrument in 2016, but its main competitor to Nanalysis’ instruments today is its 60 MHz X-Pulse instrument, launched in 2019. This instrument has been successfully applied in the food industry as its operating parameters make it well-suited for analysis of fat content in samples. It does, however, have a larger footprint than its competitors and weighs 171kg without factoring in the separate computer required for operation, meaning users are not able to truly optimize lab space.

Benchtop NMR Market Share

According to industry sources and our discussions with benchtop NMR users, Nanalysis and Magritek appear to be the two main competitors in the global benchtop NMR market. Nanalysis appears to be the dominant instrument provider in North America with ~40% of the global market, Magritek the dominant provider in Europe with another ~40% of the global market, and the remaining ~20% appears to be held by Bruker and Oxford Instruments.

Exhibit 22 – Estimated Benchtop NMR Market Share



Source: ECM Estimates

Forecasts

Growth Strategy: Organic Growth, Partnerships, and M&A

With the Company's main objective being organic growth via instrument sales and bolstering of the top line with recurring SaaS revenues, we forecast top line growth of 124% for 2021 and 76% for 2022 with no accounting for yet-unannounced acquisitions. We expect instrument sales growth to be fueled primarily by expansion of manufacturing capacity and the salesforce, as well as the other support infrastructure and distribution partnerships around the world. The Company already has a distribution partnership with SupraRnD in Canada and product development partnerships with Bosch and Sartec, two giants in the industrial technology and oil & gas industries to leverage the technology and expedite commercialization for their respective industries. If these development projects yield instruments amenable to their respective markets, Bosch and Sartec will partner as distributors of the end products and receive some portion of the sales. Nanalysis also looks to further expand its offerings by continuing its short but strong track record of M&A. Specifically, management is looking to acquire new technologies and software that either complement their NMR instrument installed base or allow for new offerings that are fitting with the magnetic resonance theme, such as portable MRI devices.

Exhibit 23 – Income Statement Forecast Summary

Financial Summary	2019	2020	Q1-21	Q2-21	Q3-21	Q4-21	2021	Q1-22	Q2-22	Q3-22	Q4-22	2022	2023
C\$M	Act.	Act.	Act.	Act.	Est.	Est.	Est.	Est.	Est.	Est.	Est.	Est.	Est.
Revenue	8.4	7.9	3.3	4.3	3.7	6.3	17.6	7.2	7.5	7.2	9.2	31.1	43.1
Growth %	0%	-6%	115%	118%	117%	138%	124%	121%	72%	95%	46%	76%	38%
Cost of Revenue	2.3	2.7	1.2	1.4	1.3	2.2	6.1	2.5	2.5	2.4	3.0	10.4	13.8
Gross Profit	6.1	5.2	2.1	2.9	2.4	4.1	11.6	4.8	4.9	4.8	6.2	20.7	29.3
Gross Profit Margin	72%	66%	65%	67%	65%	65%	66%	66%	66%	67%	67%	67%	68%
S&M Margin, %	29%	41%	32%	19%	19%	25%	24%	24%	24%	24%	24%	24%	24%
G&A Margin, %	31%	39%	21%	16%	25%	20%	20%	19%	19%	18%	18%	18%	18%
R&D Margin, %	0%	6%	4%	4%	5%	3%	4%	4%	4%	4%	4%	4%	4%
EBITDA	1.0	(1.6)	0.3	1.2	0.6	1.1	3.2	1.4	1.4	1.5	1.9	6.2	9.7
EBITDA Margin, %	12.5%	(20.9%)	8.1%	28.4%	16.0%	17.0%	18.0%	19.0%	19.0%	21.0%	21.0%	20.1%	22.5%
Net Income	(1.7)	(3.7)	(0.5)	0.2	(0.3)	0.2	(0.4)	0.2	0.3	0.3	0.7	1.5	3.6
EPS - WAD	(\$0.03)	(\$0.06)	(\$0.01)	\$0.00	(\$0.00)	\$0.00	(\$0.00)	\$0.00	\$0.00	\$0.00	\$0.01	\$0.02	\$0.04

Source: Company Filings, ECM

Manufacturing Capacity Growth to Accelerate Instrument Placements and Drive Top Line

As of the last reporting date, Nanalysis had the capacity to produce five 100 MHz spectrometers per month and had 24 of these instruments in the growing sales backlog. While component supply was disrupted in the first half of 2021 by the knock-on effects of the shipping container that blocked the Suez Canal, overall manufacturing capacity was the main bottleneck.

With the 100 MHz models expected to be the greatest contributor to revenues for the foreseeable future, management recently addressed the order backlog by expanding its Calgary manufacturing facility and onboarding more staff to double production output during the second half of 2021 and is continuing to ramp production towards doubling again over the next year. Management currently expects to ship at least 40 100 MHz instruments in 2021 along with ~70 60 MHz instruments. Indeed, as the manufacturing capacity grows and the lag between ordering and receiving the instrument decreases, the selling and marketing efforts should become more fruitful. Management expects to have enough capacity to ship 120 100 MHz instruments in 2022.

Sales Cycle Seasonality Likely to be Smoothed by 100 MHz Instrument Backlog Conversion

Management has noted in the past that there is some seasonality to the Company's instrument sales due to the seasonality of the sales cycle. Q3 tends to be a comparatively weak quarter, as customers and distributors see reduced activity during the summer months of July and August in North America and Europe, while Q4 tends to be the strongest quarter with the academic funding and spending cycles starting again in September. With the 100 MHz instruments

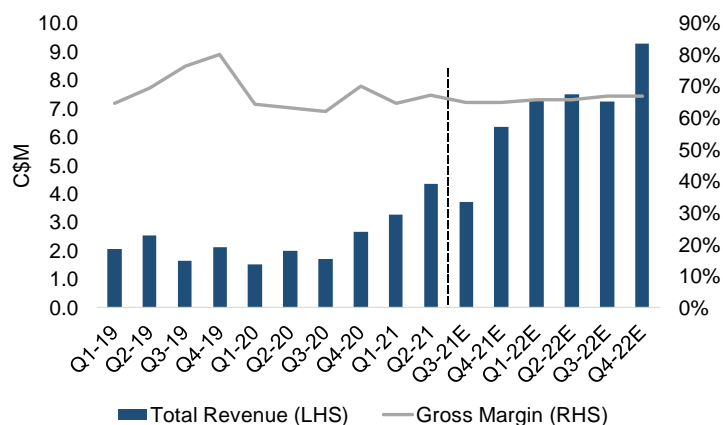
expected to emerge as the main revenue driver over the next few quarters, we may see reduced seasonality as greater revenues are recognized as a result of backlog conversion. In addition, we expect to see reduced seasonality as the end market shifts away from academia and more towards other industries with less seasonality.

Industry Leading Gross Margins Set the Company Up for Sustained Profitability

Gross Margin Ahead of the Rest, Room for Modest Improvement at Increased Scale

Nanalysis' gross margin ramped from 65% to 80% from Q119 to Q419 before dropping back to 65% in 2020 as operations were slowed by the pandemic and supply chains were disrupted. A gross margin of 65% is ~1,000 bps higher than the Company's closest publicly traded scientific instrumentation peers, including Bruker, Waters, and Agilent (see [Exhibit 32](#)). Our forecast includes modest gross margin improvement to ~67% by the end of 2022, driven by the incremental efficiencies in unit costs and manufacturing that come with increased scale and the incorporation of the margin profile of the recent acquisition of OMS, with its SaaS business model bringing a higher ongoing gross margin than the capital equipment side of the business.

Exhibit 24 – Nanalysis Historical and Forecast Revenues and Gross Margin



Source: Company Filings, ECM

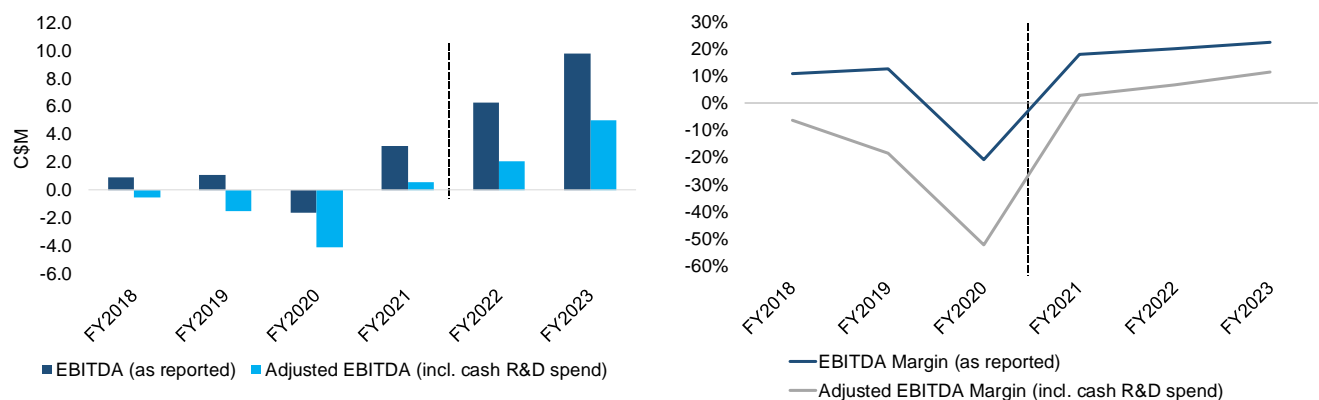
Significant Amount of Capitalized R&D to be Amortized Upon Sale of 100 MHz Instruments

We note that Nanalysis has historically recorded R&D costs associated with the benchtop instruments according to IAS 38, which states that a company may capitalize R&D costs related to the instruments if their cost can be reliably measured and it is probable that their future economic benefits will flow to the company. This has the effect of eliminating R&D expenses on the income statement during the development phase but increases non-cash amortization charges in the future as revenues related to that asset are recognized. The useful life of the 60 MHz instruments has been determined to be 5 years, while that of the 100 MHz product will be 10 years.

Back on Track for Sustained Profitability After COVID Interruption

In 2018 and 2019, the Company achieved two consecutive years of positive, low double-digit EBITDA margins (as reported, excluding capitalized R&D spend). While operations were slowed by the pandemic in 2020, Nanalysis was able to retain all its staff and return to EBITDA profitability in Q121 as labs returned to normal operations and supply chains issues were resolved. Adjusting for the capitalized R&D spend, we forecast that the Company will generate a narrowly positive adjusted EBITDA margin for 2021, which will grow to be in the low double digits by 2025.

Exhibit 25 – Nanalysis Reported and Adjusted EBITDA Margin Projections



Source: Company Filings, ECM

Burgeoning Software Business Adds Recurring Revenues to Smooth the Top Line

The recent acquisition of OMS has added advanced data processing and analysis capabilities as well as spectral database matching, both of which greatly expedite routine NMR analysis workflows where the users are looking for specific, known compounds. While these functionalities may not find as much purchase among the pharma-biotech users who are researching novel compounds with no reference materials, they greatly enhance the instruments’ use case in industries such as oil & gas, forensics, and food analysis. Technicians in these spaces may have less advanced chemical backgrounds and use the instruments to quickly test a large number of samples for a handful of known compounds. Prior to the acquisition of OMS, the instruments would do the basic data processing and cloud upload themselves and the user would do the more sophisticated analysis on a separate computer. With the new software offering, the data can be processed and uploaded to the cloud and the advanced analysis can be conducted automatically and returned to the instrument. This software offering greatly improves the portability of the instruments and will be the Company’s first step in integrating a SaaS layer to its revenues, where recurring revenues will be generated separately from the instruments.

M&A to Bolster NMR Leadership and Support MRI Development

Management is explicit in that they do not intend to roll up the benchtop NMR space, instead they are looking to acquire complementary technologies, software platforms, and other businesses for one of three purposes:

- 1) Integration of new technologies into its current NMR instrument and software offerings to further outperform competitors,
- 2) Expansion of its distribution capacity by acquiring firms with established salesforces targeting key market verticals, and
- 3) Acceleration of portable MRI product development towards approval for clinical use.

We expect future technology and software acquisitions to be predominantly in the MRI data space and structured similarly to the recent acquisitions of RS2D and OMS – small cash and stock deals for private firms with owners/management who are technical experts in their fields and can remain with the Company in an advisory capacity.

Future Healthcare Application: Portable, Miniaturized MRI is Huge Longer-Term Opportunity

Although up to 70% of hospital admissions require assessment using MRI, timely access to the machines is often limited by patient backlog and safety concerns, either due to an individual’s clinical status or potential danger in a high magnetic field strength environment. Clearly, there is room for improvement in the ~US\$8B global MRI market and miniaturized, portable instruments that can be used quickly and easily at the point of care would likely be welcomed by patients and physicians alike. MRI revolutionized diagnostic medicine in the 1980s and 1990s but, much like high-field NMR, innovation has stalled, and the MRI installed base has been outgrown by the patient population it aims to serve,

providing an attractive opportunity and a long runway for innovators that can provide portable instruments with sufficient imaging power.

Like NMR, High Upfront and Operating Costs Keep MRI out of Reach for Many

MRI instruments use similar techniques to NMR to collect detailed cross-sectional images and create detailed 3D pictures of organs, tissues, and bones for the detection of solid tumours and assessment of musculoskeletal injuries. On average, new instruments cost upwards of US\$2M while a dedicated MRI suite, with safety features built in to protect those right outside from the magnetic field, can cost hundreds of thousands more. Including installation costs, just one machine can cost ~US\$2-4M. These upfront costs, along with operating costs that can exceed US\$100K per year, then flow through to patients in the form of increasingly expensive hospital bills. With only the large hospitals able to purchase and house these instruments, patient backlog and long waiting times have become the norm. The main MRI manufacturers, such as GE (GE-NYSE, NR) and Siemens (SIE-ETR, NR), have never commercialized a portable MRI instrument.

Exhibit 26 – Examples of Traditional 3.0 T (Left) and 7.0 T (Right) MRI Setups



Source: UBC Faculty of Medicine MRI Research Centre

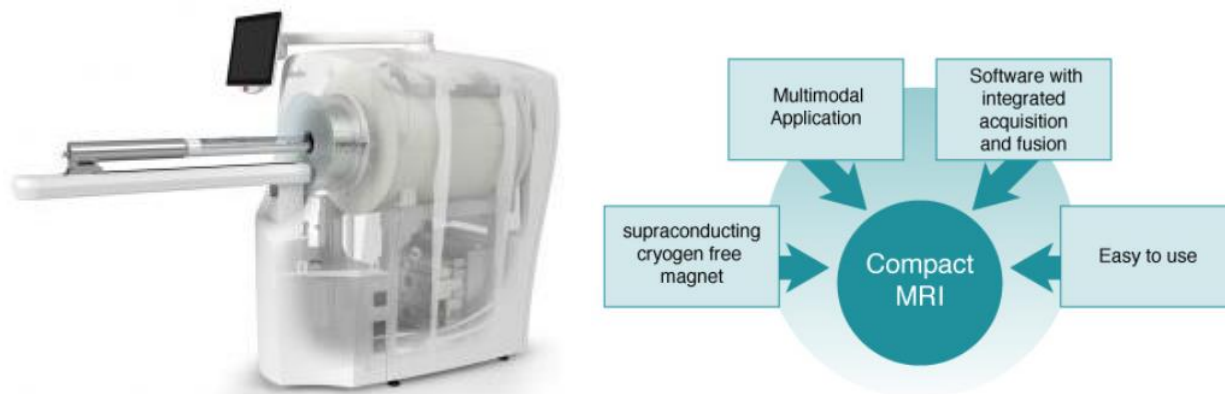
Like NMR, High Upfront and Operating Costs Impede Access to MRI

Due to advances in medical technology as well as recent regulatory changes, medical procedures and services are increasingly offered at smaller, decentralized locations. These sites are typically not financially or structurally equipped to house a traditional MRI machine, meaning patients need to be moved to a hospital or dedicated imaging facility when the need arises. With sizeable instrument backlogs and patients whose condition has deteriorated to the point where they can't be moved, portable low-field MRI instruments with sufficient imaging quality that can travel to the patient would serve as a highly attractive alternative.

Technical Similarities with NMR Allow for Application of Cameleon4 Technology in Portable MRI

Nanalysis/RS2D's Cameleon4 electronics technology, the backbone of the 100 MHz instruments and the Pulse NMR console, also powers the nanoScan instruments, the Company's line of preclinical low-field portable MRI machines that are currently in development. Nanalysis is taking two 3.0 T (128 MHz) and 7.0 T (300 MHz) nanoScan MRI machines, originally developed by RS2D and Mediso in Hungary, and further developing them with the ultimate goal of offering affordable and truly portable MRI machines for mobile detection of solid tumours in patients in healthcare facilities of all sizes and locations as well as for diagnosis of concussion in venues such as sports stadiums.

Exhibit 27 – RS2D nanoScan Compact MRI Apparatus



Source: RS2D Company Presentation

These instruments weigh in at ~500kg, do not require a separate computer station or a specially designed room for operation, and are currently being used for small animal imaging. Because the technology is particularly suitable for examinations requiring greater sensitivity, the Company is first looking to develop the instruments for preventative medicine applications such as brain imaging and solid tumour detection, rather than the assessment of musculoskeletal injuries in an emergency setting. As the Company is developing the instruments with the aim of acquiring FDA clearance for human diagnostic purposes, the end product will likely be significantly different from the current preclinical instruments, both in technical specifications and design (see [Exhibit 27](#)).

Esaote – Very Low-Field Instruments for Musculoskeletal Imaging

While the dominant suppliers of traditional MRI machines (Siemens, GE) have no portable or miniaturized instruments of their own, the early mover in miniaturized MRI appears to be Italy-based Esaote (private), which has a line of 0.3 T instruments designed for musculoskeletal injury assessment. While these are smaller and lighter than the traditional high-field instruments and operate with a magnetic field low enough to not require a dedicated MRI safety suite, they are not portable and are not sensitive enough for imaging of organs and other soft tissues. We do not see Esaote as a direct competitor of Nanalysis at this time as Nanalysis will be targeting soft tissue preventative medicine applications.

Exhibit 28 – Esaote’s Line of Miniaturized MRI Instruments for Musculoskeletal Imaging



Source: Esaote website

Hyperfine: Cashed Up Portable MRI Company Soon to be Publicly Traded with Sky-High Valuation

Once Nanalysis has developed its portable MRI instrument, its principal competitor will be Hyperfine, a Connecticut-based private company with a portable low-field MRI that was cleared by the FDA in 2020 and is specifically built for assessment of neurological issues such as stroke, hydrocephalus, and cerebral trauma. Hyperfine is set to list on the Nasdaq as part of a three-way merger with Liminal Sciences, a private neuroscience-oriented company working on machine learning technologies, and HealthCor Catalio (HCAQ-NASDAQ, NR), a special purpose acquisition company

(SPAC). The combined companies are expected to have an enterprise value of ~US\$580M (36x their 2022 sales estimate) at the close of the merger, with ~US\$375M in cash on the balance sheet to accelerate the roll-out of their Swoop MRI scanner-on-wheels.

Exhibit 29 – Hyperfine’s Swoop Portable MRI Instrument



Source: Hyperfine Website

Appetite Exists for Portable MRI but Software Improvements Required for Further Clinical Utility

A recent *Nature Communications* paper assessing the performance of Hyperfine’s Swoop machine in a clinical setting (Yuen et al. *Nat Comm* 12, 5119 (2021)) highlighted that the low signal-to-noise ratio achieved by currently available low-field MRI machines makes the clarity of the images particularly susceptible to patient movement. While improvements in the handling of these motion-related artifacts will be required for future clinical utility, the authors speculate that post-processing software techniques such as domain transform manifold learning could be used to mitigate this limitation in the future. Nanalysis’ development efforts in the portable MRI space are directed at developing 1) a portable, low-field MRI with a more uniform magnetic field to achieve a higher signal-to-noise ratio, and 2) companion software for improved post-capture image reconstruction.

Portable MRI Market Potentially Much Larger than Traditional MRI with Room for Multiple Players

While the Swoop MRI is only constructed and cleared for brain imaging, Hyperfine’s estimate of the TAM for portable MRI machines is US\$23B per year. This estimate, along with its listed lease pricing of US\$75,000 per year, implies a potential global instrument base of ~300,000 portable MRI machines. If Hyperfine successfully corners the brain imaging market, other companies such as Nanalysis may be left to target other adjacent markets. Due to the small size required of the instruments, a specific design/build may be required to cater to specific body parts with little interchangeability. For example, the instruments used for brain imaging may not be amenable for pelvic or limb analysis and vice versa.

Valuation Warranted Based on Portable NMR Business, MRI Provides Upside Optionality

While we see miniaturized MRI as a significant market opportunity for Nanalysis, we believe that our Buy rating and target price of \$2.85 are warranted based on the NMR business alone (see valuation section below). As the MRI business likely won’t be commercially viable for at least two more years, we have not factored any MRI instrument sales or recurring MRI software revenues into our operating projections, and we do not include MRI instrument suppliers in our comparables analysis. However, we believe that investors should consider the meaningful optionality that this opportunity provides for the company over the medium and longer-term. Prior to commercial sales, we would expect further partnerships or key milestones on the MRI development to be positive catalysts for investors that would lead us to revisit our target price.

Capital Structure and Insider Ownership

Recent Bought Deal Shores Up Cash Position for Instrument Roll-out and M&A

On July 29, 2021, Nanalysis announced a bought deal of 7.7M units, followed by a private placement of 1.5M units that closed on August 25, 2021 (both offerings led by Echelon). The units of both offerings were sold at a price of \$1.20 per unit, each consisting of one common share and one-half of a warrant, with each whole warrant being exercisable at \$1.70 for a period of 24 months following the private placement closing date. The combined offerings raised gross proceeds of \$11.0M, which the Company intends to use for general corporate and other working capital purposes, as well as additional potential acquisitions.

The Company has a clean balance sheet, with ~\$13.2M in cash and ~\$4.7M in debt and leases, for ~\$8.5M of net cash. While we expect Nanalysis to achieve sustained positive operating cash flow over the coming years, the cash R&D spend that is capitalized and accounted for as an investing cash flow could increase going forward as the Company advances its compact MRI development. In addition, management is likely to acquire complementary companies and/or technologies that accelerate the development and adoption of the compact instruments. Extrapolating from the Company's M&A track record, future deals would likely involve both cash and stock, which could entail some small capital raises along the way. While we believe that Nanalysis could grow without it, additional capital could be used to grow the salesforce, expand production capacity, and manage working capital to accelerate growth.

Nanalysis also has an undrawn, \$2M line of credit with Scotiabank (BNS-TSX, NR) which bears interest at prime plus 0.75%. Under the terms of the Credit Facility, the Company is required to maintain a current ratio above 1.1x. While the Company had a current ratio of 2.0x as of June 30, 2021, the latest balance sheet date, the credit line had not been drawn down.

Exhibit 30 – Debt Summary and Capital Structure

Based on a Share Price of C\$1.09	Basic	Effect of Dilutive Securities	Diluted	Debt Summary	Outstanding	Rate
Shares (M)	76.7	11.9	88.6	WINN #1, matures May 2022	\$156,000	-
Market Value of Equity (\$M)	\$83.6	\$13.0	\$96.6	WINN #2, matures Jan 2027	\$2,309,000	-
Debt (Principal Amount) (\$M)	\$4.6		\$4.6	CEBA, matures Dec 2022	\$39,000	-
Leases (\$M)	\$0.6		\$0.6	PGE (€), matures Jun 2026	\$129,000	0.70%
Cash (\$M)	\$13.7		\$13.7	PdS (€), matures Mar 2024	\$645,000	-
Enterprise Value (\$)	\$75.0	\$13.0	\$88.0	RRRF, matures Dec 2025	\$834,000	-
<i>Equity as a % of Capital</i>	<i>82%</i>		<i>84%</i>	Total	\$4,112,000	0.02%
<i>Debt as a % of Capital</i>	<i>18%</i>		<i>16%</i>			
<i>Cash as a % of MV of Equity</i>	<i>16%</i>		<i>14%</i>			
<i>Cash per Share</i>	<i>\$0.18</i>		<i>\$0.15</i>			

Type of Shares	Outstanding	Common Share Equivalents	Exercise Proceeds	Notes
Basic Share Count	76,669,667	76,669,667		Single class of shares
Total Shares Under Lock Up	2,200,000	2,200,000	\$2,398,000	
Total Options Outstanding	4,853,500	4,853,500	\$2,815,030	Weighted average exercise price of \$0.58
Total Warrants Outstanding	4,583,333	4,583,333	\$7,791,667	Exercisable at \$1.70 through July 2023
Total RSUs	280,000	280,000	-	
Fully Dil. Shares Outstanding	88,586,500	88,586,500	\$13,004,697	

Source: Nanalysis Filings, ECM

Insider and Employee Ownership Drive Alignment

Management and Insiders currently have ~6% stake in the Company. Furthermore, Nanalysis has a strong culture of employee ownership with staff at all levels encouraged to own the stock and receiving options for compensation, resulting in employees owning approximately 10-20% of the shares outstanding on top of management's ~6%. The larger scientific instrument providers are somewhat notorious for poaching research staff, salespeople, and technicians from their competitors and clients to diversify their own knowledge base and stifle competition. Management makes clear their intention for key employees throughout the organization to have equity interests in the Company such that their interests are aligned for the longer term.

Exhibit 31 – Insider Ownership

Holder	Occupation/Notes	Common Stock Equivalent Held	Percent of Common Shares	Position Date
Sean Krakiwsky	Founder, CEO, President	1,164,429	1.6%	2021-05-31
Michal Okoniewski	Independent Director	1,067,500	1.5%	2021-07-21
Werner Gartner	Independent Director	791,385	1.1%	2021-05-31
Martin Burian	Chairman of the Board	518,500	0.7%	2021-05-31
Julien Muller	CTO	243,927	0.3%	2021-04-27
Luke Caplette	CFO	140,000	0.2%	2021-06-23
Guido Cloetens	Independent Director	43,750	0.1%	2021-06-25
Total		3,969,491	5.5%	

Source: CapIQ

Valuation

We are initiating coverage of Nanalysis with a BUY rating and \$2.85 price target that is derived using a 2022 EV/Sales multiple of 8x, which is consistent with the average multiples and its broader peer group.

The Company's most directly comparable publicly traded peers are scientific instrumentation companies that cater to many of the same academic and industry end users as Nanalysis and in many cases are indirect competitors. The Company's closest peers are Bruker, Waters, Agilent, and 908 Devices. Bruker competes directly via its high- and low-field NMR spectrometers whereas Waters and Agilent are leading provisioners of instruments and consumables in the fields of liquid chromatography and mass spectrometry, which are other methods widely used for both qualitative and quantitative chemical analysis.

Exhibit 32 – Comparables Analysis

Company Name	Market Cap - FD (US\$M)	EV - FD (US\$M)	Returns			EV/Sales			EV/EBITDA			Gross Margin			EBITDA Margin			
			1M	3M	YTD	1Y	2020	2021E	2022E	2020	2021E	2022E	2020	2021E	2022E	2020	2021E	2022E
Nanalysis Scientific Corp.	75	69	-5%	13%	119%	131%	11.2x	5.0x	2.8x	NM	27.7x	14.0x	65.6%	65.5%	66.5%	-20.9%	18.0%	20.1%
Closest Peer Group - Life Sciences Instruments & Tools																		
Bruker	12,489	12,659	-2%	14%	53%	114%	6.4x	5.4x	5.1x	36.5x	25.4x	23.4x	47.5%	51.1%	48.2%	17.4%	21.1%	21.7%
Waters	24,288	25,339	-2%	15%	60%	102%	10.7x	9.2x	8.7x	31.5x	27.0x	25.4x	57.4%	58.3%	56.9%	34.0%	34.0%	34.2%
Agilent Technologies	51,869	53,485	2%	18%	45%	72%	10.0x	8.5x	7.9x	39.6x	30.9x	27.9x	53.1%	56.2%	55.2%	25.3%	27.4%	28.5%
908 Devices	977	857	8%	-12%	-38%	-28%	31.9x	20.7x	16.4x	NM	NM	NM	55.5%	54.9%	57.2%	-18.5%	-45.1%	-24.5%
Average			2%	9%	30%	65%	14.7x	10.9x	9.5x	35.9x	27.8x	25.6x	53.4%	55.1%	54.4%	14.6%	9.3%	15.0%
Median			0%	15%	49%	87%	10.4x	8.8x	8.3x	36.5x	27.0x	25.4x	54.3%	55.5%	56.0%	21.4%	24.2%	25.1%
Broader Peer Group - Scientific And Industrial Instruments & Tools																		
Bruker	12,489	12,659	-2%	14%	53%	114%	6.4x	5.4x	5.1x	36.5x	25.4x	23.4x	47.5%	51.1%	48.2%	17.4%	21.1%	21.7%
Waters	24,288	25,339	-2%	15%	60%	102%	10.7x	9.2x	8.7x	31.5x	27.0x	25.4x	57.4%	58.3%	56.9%	34.0%	34.0%	34.2%
Agilent Technologies	51,869	53,485	2%	18%	45%	72%	10.0x	8.5x	7.9x	39.6x	30.9x	27.9x	53.1%	56.2%	55.2%	25.3%	27.4%	28.5%
908 Devices	977	857	8%	-12%	-38%	-28%	31.9x	20.7x	16.4x	NM	NM	NM	55.5%	54.9%	57.2%	-18.5%	-45.1%	-24.5%
Illumina Inc.	64,255	62,405	-10%	-4%	18%	48%	19.3x	14.3x	12.6x	75.0x	46.2x	45.0x	68.9%	70.5%	69.0%	25.7%	31.0%	28.0%
Thermo Fisher Scientific	232,196	243,964	6%	22%	27%	38%	7.6x	6.8x	6.9x	23.9x	21.1x	24.3x	49.7%	50.9%	50.9%	31.7%	32.0%	28.5%
Harvard Bioscience	310	356	-4%	6%	77%	134%	3.5x	3.1x	2.8x	45.3x	28.0x	17.0x	56.8%	58.9%	57.0%	7.7%	10.9%	16.7%
National Instruments	5,493	5,372	1%	-2%	-6%	14%	4.2x	3.7x	3.4x	33.7x	22.4x	16.8x	71.3%	75.1%	74.3%	12.4%	16.5%	20.1%
Keysight Technologies	32,028	31,903	3%	18%	32%	79%	7.6x	6.5x	6.2x	28.9x	21.9x	20.3x	60.0%	64.8%	64.1%	26.1%	29.6%	30.3%
Fortive	25,707	26,913	-2%	4%	1%	-5%	5.8x	5.1x	4.8x	26.4x	20.6x	18.9x	56.5%	57.4%	53.3%	22.0%	24.6%	25.3%
Cognex	15,032	14,649	0%	10%	6%	38%	18.1x	14.0x	12.4x	63.0x	40.2x	33.7x	74.5%	74.9%	74.6%	28.7%	34.9%	37.0%
Hyperfine	958	581	0%	1%	NA	NA	NA	252.6x	35.6x	NA	NA	NA	NA	NA	47.9%	NA	NA	NA
Average (excl. Hyperfine)			0%	8%	25%	55%	11.4x	8.8x	7.9x	40.4x	28.4x	25.3x	59.2%	61.2%	60.1%	19.3%	19.7%	22.3%
Median (excl. Hyperfine)			0%	10%	27%	48%	7.6x	6.8x	6.9x	35.1x	26.2x	23.9x	56.8%	58.3%	57.0%	25.3%	27.4%	28.0%

Note that Nanalysis capitalizes the majority of their R&D, making EBITDA not directly comparable to that of peers that expense R&D

Note that the Hyperfine valuation is based on management's guidance as consensus estimates are not yet available

Source: CapIQ, ECM

Of the listed peers, 908 Devices, a provisioner of benchtop/portable mass spectrometry instruments that is expected to achieve ~55% revenue growth in 2021 (consensus 2021 revenues of US\$41.3M), is arguably most similar to Nanalysis. With an ~\$1B market cap, 908 Devices trades at ~17x expected 2022 sales. While we value Nanalysis based on the average 2022 EV/Sales multiple of the broader peer group, we highlight the valuation ascribed to 908 Devices as a blue-sky valuation that could be achievable should the company execute on its growth plans in the coming years.

Due to the prospective nature of Nanalysis' portable MRI business, we do not include MRI companies in the comparables analysis. We do note, however, that portable MRI company Hyperfine has a pro forma enterprise value of ~US\$580M (36x its 2022 sales estimate). This valuation is attributable to the size of the portable MRI market opportunity and shows that if Nanalysis can successfully commercialize an instrument to compete in this market in the coming years, a much higher valuation could be warranted.

Five-year DCF Supports Our 8x 2022 EV/Sales Valuation

Our 8x 2022 EV/Sales valuation is supported by our five-year DCF valuation (9% discount rate, 5% terminal growth rate), which returns a target price of \$2.65 and confirms our view that Nanalysis is currently heavily undervalued and deserving of a Buy rating. Exhibit 33 shows a summary of our DCF parameters, the summary of our forecast and a sensitivity analysis for the discount and terminal growth rates. The 9% discount rate reflects the inherent execution risk attributable to a young, acquisitive firm with a new product/technology in a highly innovative sector.

Exhibit 33 – (A) DCF Parameters, (B) DCF Summary (C) Sensitivity Analysis

A Assumptions		B Discounted Cashflows					
		2021	2022	2023	2024	2025	
Current Stock Price	\$1.05	Operating profit (EBIT)	(0.1)	1.9	4.6	11.0	16.4
WACC (%)	9.0%	LESS: Income tax expense	-	0.4	1.0	2.3	3.4
Residual growth rate (%)	5.0%	Net Operating CF (NOPAT)	(0.1)	1.5	3.6	8.7	12.9
Tax Rate	21.0%	Depreciation & Amortization	0.6	0.6	0.6	0.7	0.8
PV of CF	8.4	Net WC change y/y	(3.0)	(4.7)	(2.6)	(3.9)	(1.2)
PV of Terminal Value	220.7	Capex	(0.3)	(0.1)	(0.1)	(0.1)	(0.2)
Enterprise Value	229.0	FCF	(2.9)	(2.7)	1.5	5.3	12.4
Cash	12.3	Tax rate %	0%	21%	21%	21%	21%
Debt & Leases	5.2	PV of annual CF (C\$M)	(2.7)	(2.4)	1.2	3.9	8.4
Net Cash (Debt)	7.2	Terminal value (C\$M)					325.2
Other Pipeline Value (Approx.)		C					
Total Valuation = Equity Value	236.2		Discount Rate				
Diluted Shares Outstanding (as of FY22)	88.6		8%	9%	10%		
DCF Target Price	\$2.65	Residual growth	7%	\$10.75	\$5.25	\$3.40	
DCF Target Price % Upside	152%		6%	\$5.40	\$3.55	\$2.60	
			5%	\$3.65	\$2.65	\$2.10	
			4%	\$2.75	\$2.15	\$1.75	
			3%	\$2.20	\$1.80	\$1.50	

Source: ECM

Large Players Supplement In-House R&D with M&A, Making Nanalysis a Potential Target

While a handful of large, diversified players dominate the scientific instrumentation industry, a lot of new instruments and technologies these players launch are first acquired from smaller firms. Given Nanalysis' leadership in a high-growth market, we believe that it would make an attractive target for a number of larger players. We highlight some notable recent M&A transactions in [Exhibit 34](#) below to estimate a putative take-out valuation for Nanalysis. The list of acquired target companies included is limited to providers of instrumentation, components, and software for use in scientific research and other similar industry applications, representing the constituent elements of Nanalysis' business. In 2021, the average acquisition multiple was 10.5x TTM sales, which demonstrates the value of these high-growth, R&D leaders in the marketplace and provides additional support for our valuation of Nanalysis.

Exhibit 34 – Recent Industry Transactions Involving Comparable Companies

Date	Buyer	Target	TTM Price/Sales	Deal Amount (US\$M)	2020 Revenue (US\$M)	Target Company Offerings
Jan 2021	PerkinElmer	Oxford Immunotec	11.4x	591	52	Infectious disease diagnostics
Jan 2021	Steris	Cantel Medical	4.6x	4,600	1,000	Infection prevention products and services
Jan 2021	Philips	Capsule Technologies	6.4x	635	100	Medical device information platform
Jan 2021	Boston Scientific	Preventice Solutions	5.9x	925	158	External cardiac monitoring technologies
Mar 2021	Agilent	Resolution Bioscience	15.7x	550	35	NGS-based oncology solutions
Mar 2021	Roche	GenMark Diagnostics	10.5x	1,800	172	Infectious disease diagnostics
Apr 2021	Hologic	Mobidiag	18.9x	795	42	Acute care diagnostics
Average			10.5x			
Median			10.5x			

Source: FactSet, Press Releases, ECM

Investment Risks

Acquisition-Related Risks

As part of its business strategy, Nanalysis is actively seeking to expand its product and service offerings through acquisitions. Any difficulty in integrating operations or failure to achieve the expected benefits of the combination would negatively impact the Company's future performance relative to expectations.

Key Suppliers Risk

The Company relies on a few manufacturers for its input materials. Should demand outstrip supply, equipment shortages could occur as suppliers may not provide the equipment to satisfy demand. Any adverse effects leading to a recall of manufacturing components could affect the firm's ability to price its products competitively, with adverse implications to the Company's broader margin profile.

New Product Development Risk

Nanalysis develops products for an industry that is characterized by rapid technological changes, frequent new product and service introductions, and evolving industry standards. Without timely introduction of new products and enhancements, its products could become obsolete. Indeed, the Company's roadmap to commercialize benchtop instruments for certain industrial uses relies in part on product development partnerships with partners such as Bosch and Sartec.

Impairment Charge Risk

The Company has capitalized all applicable R&D costs associated with the development of its instruments. As such, an intangible asset has been recorded on the balance sheet that will be amortized over the useful lives of the instruments. The estimation of the value of this asset will have required a significant degree of subjectivity and judgment, meaning that if the assumptions used in the estimations turn out to be inaccurate, the Company may incur a potentially large non-cash impairment charge that would be reflected in the income statement.

Foreign Exchange Rate Risk

Nanalysis reports financial results in Canadian dollars and is listed on the TSX Venture Exchange, although most of its revenue-generating operations occur in the US and outside of Canada. Significant fluctuations in exchange rates between the Canadian dollar, the United States dollar, and other currencies may adversely affect reported revenues and net income.

Limited Operating History

Given the Company's limited operating history, it is subject to the business risks and uncertainties associated with any new business. These include under-capitalization, cash shortages, personnel limitations, limited financial and other resources, and the risk that it will not achieve its growth objectives.

Access to Capital

The Company's ability to manage its strategy is dependent on numerous factors, including availability of working capital and achieving and maintaining sufficient profit margins. If the Company is unable to meet some of its objectives it may need to raise capital. If it is unable to raise the necessary capital, or obtain capital on acceptable terms, its business operations could be materially impacted.

COVID-19 Pandemic Risk

The risk that Nanalysis and its employees, customers, suppliers, and other partners may be prevented from conducting business activities for an indefinite period, including due to shutdowns that may be requested or mandated by governmental authorities exists. Ongoing government responses to the pandemic include travel restrictions and quarantine measures, which may lead to the suspension of business operations and disruption to the Company's supply chains and sales channels. The extent to which the spread of COVID-19 impacts the Company's business will depend on future developments, which are highly uncertain and cannot be predicted at this time.

Appendix A: Management Team and Board of Directors

Management Team

Sean Krakiwsky, MSc – Founder, President, Chief Executive Officer

Nanalysis is Mr. Krakiwsky's third tech start-up over a 20-year period, raising over \$25M in equity funding for those companies. Previously he founded and built a high-performance computing company called Acceleware (AXE-TSXV, NR) providing software solutions to harness the parallel processing capabilities of multi-core GPUs/CPU's for the Electronic Design and Oil & Gas industries. Mr. Krakiwsky has an M.Sc. and B.Sc. in Electrical Engineering from the University of Calgary.

Julien Muller – Chief Technology Officer

Mr. Muller has 16+ years of experience in NMR/MRI technology. After obtaining a diploma in electronic and system engineering from INSA Strasbourg, he started with RS2D in 2004, studying and designing RS2D's first NMR spectrometer solution. From here, he designed a custom MRI product using a superconducting cryogen-free magnet and high-field NMR console. In 2018, Mr. Mueller released the 4th generation of NMR/MRI spectrometer, providing the latest FPGA technology to the whole magnetic resonance product profile.

Luke Caplette, CA, CPA – Chief Financial Officer

With a BBA in Accounting from Mount Royal University and a CA designation, Mr. Caplette has 10 years of accounting and finance experience with publicly listed companies. He has previously held positions at an international accounting firm and, most recently, was CFO of a publicly traded oilfield services company. He brings with him in-depth knowledge of financial planning, forecasting, and M&A experience and currently serves on the Advisory Board of Field Safe, a software company.

Rémy Schimpf – Senior VP Sales

Founder of RS2D company in 2003, Mr. Schimpf has a background in chemistry and holds an MBA in Business Management from IFG Paris. He was employed at Bruker Biospin (France) for 24 years, working as an NMR application engineer, NMR Product Manager, and finally as Sales and Marketing Director. With more than 40 years of experience in the field of NMR and MRI, he was leading the development of the world's first preclinical MRI system equipped with a cryogen-free superconducting magnet.

Board of Directors

Martin Burian, CA, CPA, CBV, ICD.D – Chairman of the Board, Audit Committee, Corporate Governance, Compensation and Nomination Committee

Mr. Burian holds ICD.D (Institute of Corporate Directors), Chartered Professional Accountant and Chartered Business Valuator designations. He has a 30-year career in investment banking, is currently Managing Director at RCI Capital Group, and held similar senior positions at Haywood Securities, Bolder Investment Partners, and Canaccord Capital. Mr. Burian is an independent member of several other public company boards as well as privately held Heffel Gallery Limited where he is also part-time CFO.

Werner Gartner CMA, CPA – Director, Audit Committee

Mr. Gartner has over 24 years executive/board experience with technology-based businesses, including NovAtel Inc., Hemisphere GNSS Inc., 4iiii Innovation Inc, Psyko Audio Labs Inc., and Novariant Inc. He is a member of the A100, an organization composed of technology company founders and entrepreneurs focused on growing the Alberta technology sector. Mr. Gartner received a B.Sc. from Western University in Ontario and an MBA from the Schulich School of Business at York University in Toronto.

Dr. Michal Okoniewski – Director, Corporate Governance, Compensation and Nomination Committee

A renowned expert in applied electrodynamics and RF/antenna engineering, Dr. Okoniewski has a proven history of developing leading-edge scientific solutions for the electronic, medical, and energy industries. With over 25 years of experience, he has pioneered hardware acceleration of computational electromagnetics, holding several patents. Prior to co-founding Acceleware in 2004, Dr. Okoniewski worked with TR-Labs and provided consulting services for the electronic and biomedical industries in North America and Europe. Dr. Okoniewski has a Ph.D. in Electrical Engineering from the Technical University, Gdansk, and is a Fellow of IEEE. He is a Professor for the Electrical and Computer Engineering Department with the Schulich School of Engineering at the University of Calgary.

Guido Cloetens – Director, Audit Committee

Mr. Cloetens is a Certified investment advisor (EHSAL Brussels) and holds a degree in corporate finance, investment and financial statement analysis (ULB). After a 25-year career with major European banks specializing in wealth management and institutional investing, Mr. Cloetens is now focused on assisting junior companies in raising capital. Mr. Cloetens currently serves as Chairman and Chief Executive Officer of Elysee Development Corp., and is a director of Nanalysis Scientific Corp.

Appendix B:

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Company: Nanalysis Scientific Corp. | TSXV: NSCI

I, Stefan Quenneville, hereby certify that the views expressed in this report accurately reflect my personal views about the subject securities or issuers. I also certify that I have not, am not, and will not receive, directly or indirectly, compensation in exchange for expressing the specific recommendations or views in this report.

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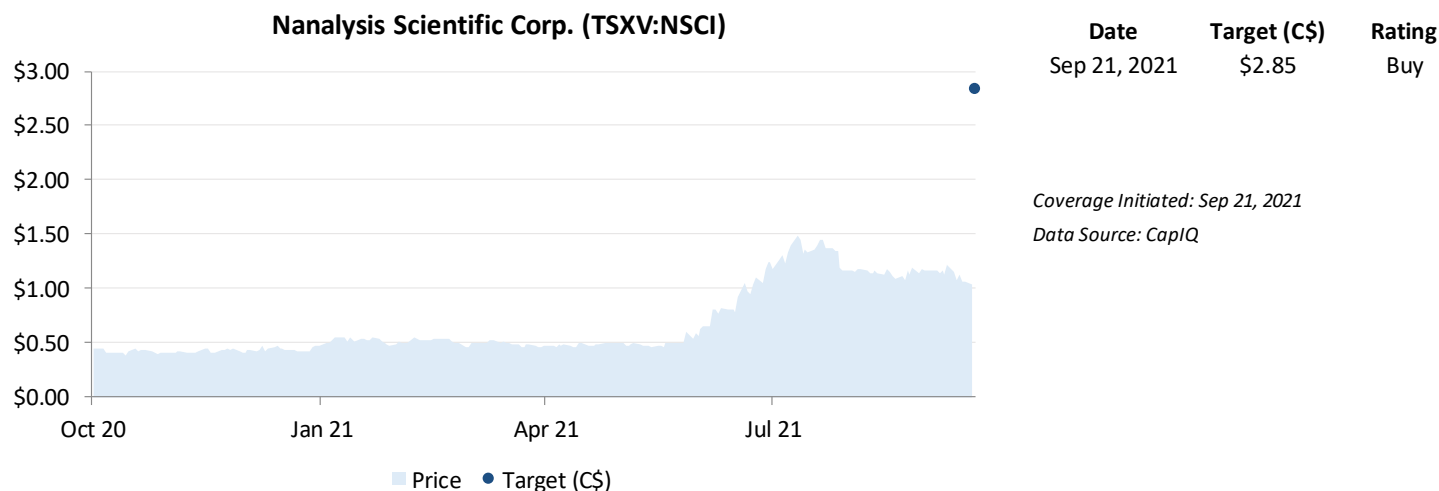
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