



## INITIATION REPORT

Precision Instruments Industry • August 19, 2010

### DYNASIL CORPORATION OF AMERICA (OTC.BB:DYSL)

- **Dynasil – A Research-Based Company with Technologies for a Healthier, Safer World:**
  - New sensors protect against dangerous radioactive materials.
  - Lead detector minimizes the threat from environmental hazards.
  - Medical probes identify lymph nodes connected to tumor sites, thereby sparing healthy normal tissue from surgical intervention.
- **Contract research services open new opportunities and generate more than \$20 million in revenue that helps finance innovative products.**
- **Expanding markets & excellent track record point to further sales and profit growth.**
- **We are initiating coverage of undervalued Dynasil shares with a BUY recommendation and a target price of \$8.00 per share.**

**Dynasil Corporation of America (OTC.BB: DYSL)** is an emerging growth company with proprietary technologies that reduce the threat posed by dangerous materials and that improve medical care. Years of R&D are about to pay off through a platform of innovative scintillators for various precision instruments. The first two products will debut within 9 months to improve the Department of Homeland Security's radiation detection capability. A recent acquisition has secured sufficient manufacturing capacity to support their commercial launch, and it has also given Dynasil a foothold in the baggage screening market. Meanwhile, an environmental monitor is set to benefit from Environmental Protection Agency rules pertaining to building renovations and from a gradual strengthening of the housing and commercial real estate markets. Also, a new probe should help surgeons tell which lymph nodes connect to lung tumors and may merit removal. Long-range prospects are equally bright – the broad R&D pipeline includes instruments with homeland security, medical, environmental, aviation, and defense applications.

Share Price (8/18/10)	\$3.20
52-Week Price Low / High	\$1.50-\$3.25
Mkt. Capitalization (issued)	\$40.5 million
Shares Outstanding (issued)	12.67 million
12-month Target Price	\$8.00
Website	<a href="http://www.dynasilcorp.com">www.dynasilcorp.com</a>



We believe Dynasil is a compelling investment opportunity. Its shares are undervalued relative to their peer group, and the pending introduction of radiation detectors should provide solid fundamental support to their price. Accordingly, we are initiating coverage with a BUY recommendation and a target price of \$8.00 per share.

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**INVESTMENT HIGHLIGHTS/KEY POINTS:**

**EXPERTISE IN MATERIAL SCIENCE YIELDS A SOLUTION FOR HOMELAND SECURITY.** The United States has diligently protected its shores from terrorist attacks since 9/11, and a key element in the shield has been technology used to screen for radioactive substances that might be shipped from other countries, notably former territories of the Soviet Union. The most dangerous of these are plutonium, uranium, and heavy metals that emit more than one form of radiation, notably gamma rays and neutrons. Given the distinct properties of these types of energy, two different detectors have been used. But with the global supply of an essential component (helium-3) for neutron detectors dwindling, a search for alternative materials was begun a few years ago. Today, Dynasil is prepared to solve the problem. With the support of Homeland Security, it has developed improved scintillators, one that enhances gamma ray detection, another that is capable of detecting both gamma rays and neutrons, and a third, proprietary dual gamma/neutron scintillator with a greater ability to identify the radioactive material. The Company's success has garnered \$8 million in U.S. government contracts to conduct research on scintillator crystals, and it has begun to work with a small, but important group of detector manufacturers to expedite commercialization.

**RECENT ACQUISITION EXPANDS SCINTILLATOR MANUFACTURING CAPABILITY.** Dynasil purchased Hilger Crystals, a manufacturer of scintillation and optical crystals in the United Kingdom for \$4 million. Working with these unique materials is as much an art as it is a science, and so, we believe the Company was fortunate to find a firm with this level of expertise. The company comes with about \$4 million in annual business and sufficient crystal-growing space and packaging capacity to produce Dynasil's new scintillation crystals. Also, as a qualified supplier for a new baggage scanning system, Hilger is poised to expand its base business, probably by more than \$1 million in revenue in fiscal 2011. We figure the acquisition will be immediately accretive to Dynasil's earnings.

**CONTRACT R&D SERVICES FACILITATE THE DEVELOPMENT OF NEW PROJECTS.** The Company's scintillator platform originated in the laboratory of Radiation Monitoring Devices, which was acquired in 2008. That subsidiary has a long history of performing contract research services for the federal government with a fixed profit margin. The value of its contracts has grown since the acquisition, and the current backlog stands at nearly 2 years. A portion of this work has given rise to internal development programs, such as the dual gamma/neutron detectors, and new products based on its government contract research should roll out in the years ahead. Another plus is that demand for R&D contract services is not subject to fluctuations in the global economy.

**NEW PRODUCTS ARE BUILDING UPON A SOLID BASE.** The current product line includes special, profitable niche businesses within the optic/photonic market, as well as analytical instruments. No single item is a major source of business, but combined, they constitute a healthy and growing revenue source. Many of the component purchasers are instrument manufacturers, and they are in a diverse group of industries, including solar energy, aviation, automobile, semiconductor, and medical devices. This gives Dynasil opportunities to leverage its technologies via supply agreements in areas that it chooses not to pursue alone. In addition, this diverse client base partially shields Dynasil from downturns in any one sector.

**OPERATIONS ARE PROFITABLE AND EXPANDING.** The Company has made several savvy acquisitions to complement its internal growth since Craig Dunham assumed the role of Chief Executive Officer in 2004. The deals have been immediately accretive, with some providing only new clients; others, technological expertise; and still others, established businesses within its areas of focus. An emphasis on creating clear objectives and executing on plan have resulted in a great track record with the acquisitions. Thus, operations should generate close to \$41 million in revenue in fiscal 2010 (ends September 30<sup>th</sup>) and share earnings of approximately \$0.17 per share, versus \$0.08 a year ago. The outlook for the coming fiscal year is even brighter, as we estimate that share net will reach \$0.23 on revenue of \$51 million.

**DYNASIL SHARES ARE AN ATTRACTIVE HOLDING.** As operations are set to benefit from new products, we believe investors seeking microcap opportunities will appreciate the sound fundamental story here. Dynasil's long-range strategy of using its proven scientific expertise to diversify its product line and clientele further should sustain the current momentum over next five years. A healthy balance sheet and positive cash flow should provide ample financial flexibility for management to carry out its strategic plan. We are initiating coverage of Dynasil with a BUY recommendation and a target price of \$8.00 per share.

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**TABLE OF CONTENTS**

<b>Management Team</b> .....	4
<b>Board of Directors</b> .....	4
<b>A History of Strategic Decisions</b> .....	5
<b>... And Success in Integrating Operations</b> .....	5
<b>Recent Operating Performance</b> .....	6
<b>Protecting Against Radioactive Materials</b> .....	7
Scintillation Detectors.....	7
About Scintillator Materials.....	7
Dynasil’s Innovative Scintillation Materials.....	8
The Radiation Detection Market.....	9
Dynasil’s Commercialization Strategy.....	10
A Key Acquisition Secures Manufacturing Capacity.....	10
<b>The Products &amp; Instruments Segment</b> .....	11
Improving the Outcome of Cancer Surgeries.....	11
Protecting Against Sun Exposure.....	12
Preventing Exposure to Lead in the Environment.....	12
<b>Contract Research Services Segment</b> .....	13
<b>Expanding Markets &amp; the R&amp;D Pipeline</b> .....	14
Material Science.....	14
High-Definition Scintillation Detectors.....	14
Instrumentation.....	15
Medical Probes.....	16
<b>Competition</b> .....	16
<b>Investment Concerns and Risks</b> .....	17
<b>Financial Analysis &amp; Valuation</b> .....	18
Sources of Revenue.....	18
Income Statement.....	19
Balance Sheet.....	20
Discounted Cash Flow Analysis.....	21
Comparative Valuation.....	22
<b>Disclosures</b> .....	23

## MANAGEMENT TEAM

### **Craig T. Dunham – President & Chief Executive Officer**

- Has served in his current capacity since October 2004.
- Has 25 years of industry experience, serving as the Vice President/General Manager of the Tubular Division at Kimble Glass Corporation and 20 years in a broad range of leadership positions with the glass, ceramics, and photonics businesses of Corning Inc.

### **Richard A. Johnson – Chief Financial Officer**

- Has more than 20 years of experience in finance and operations management, including serving as CFO for Tejas Research and Engineering; COO at Mondrian-Hall; and Treasurer, VP Finance, and CFO at Charrette Corporation.
- Has been involved in more than 20 acquisitions and a wide range of financing activities.

## BOARD OF DIRECTORS

### **Peter Sulick – Chairman of the Board & Audit Committee Chairman**

- Has served on the Dynasil Board since June 2008 and is currently President and CEO of AmeriSite, LLC, a real estate development and investment company.
- Founded Independence Broadcasting Corporation, PowerFone, SSPCS Corp., and AmeriSite, LLC, and held senior-level financial positions in ITT.

### **James Saltzman – Vice Chairman**

- Has been a member of Dynasil's Board since 1992 and served as Chairman from January 1999 until September 2009.
- Helped found several companies that were later acquired by larger corporations and played key roles in Dynasil's acquisitions of Optometrics and RMD, as well as equity financing.

### **Cecil Ursprung – Director**

- Has served on the Dynasil Board since 2007.
- Is the former Chairman and CEO of Reflexite Corporation, a \$100 million business making reflective products to enhance safety and optical films used to manage light in LCD displays.

### **Dr. Gerald Entine – Director**

- Is the founder of RMD and RMD Instruments, and has served on the Dynasil Board since 2009.
- Has more than 40 years of experience in applied and basic scientific research in optics, nuclear sensors and instrumentation.

### **Dr. Michael Joyner – Director**

- Elected to the Dynasil Board in 2010.
- Serves as the Associate Dean and Deputy Director for Research at the Mayo Clinic, having received numerous national and international awards for his research in physiology.

### **David Kronfeld – Director**

- Elected to the Dynasil Board in 2010.
- Is the founder of JK&B Capital and has over 30 years of experience as a venture capital investor and telecommunications industry executive.

### **Craig T. Dunham - Director**

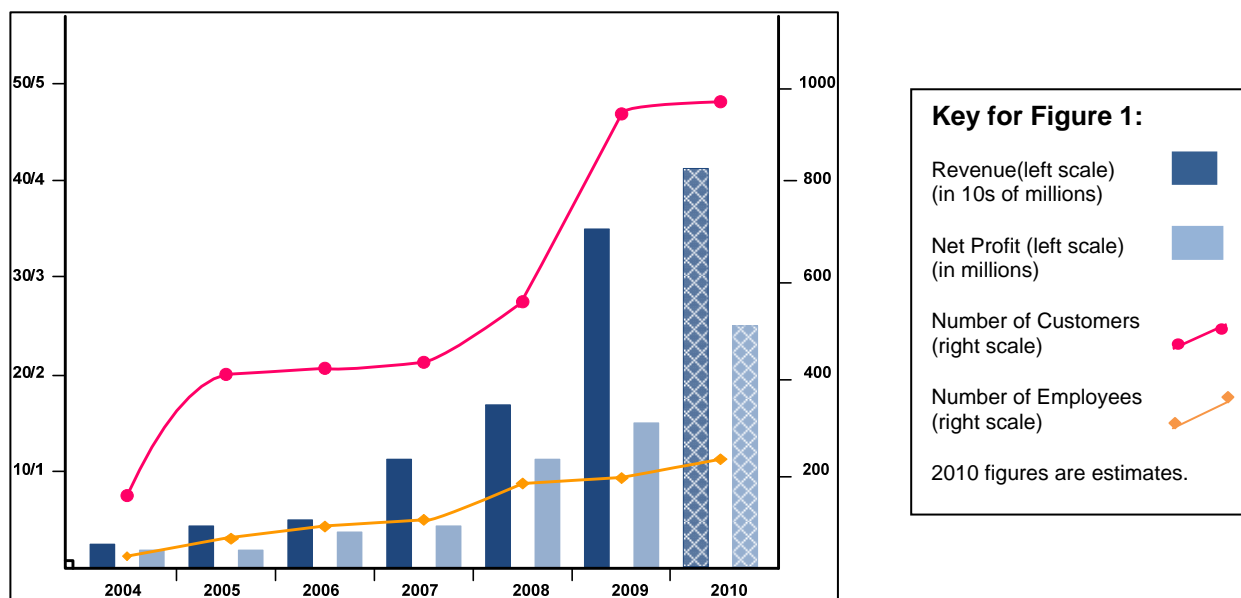
## A HISTORY OF STRATEGIC DECISIONS...

- 3,'05 Acquired Optometrics, a supplier of optical components and instruments.
- 10,'06 Acquired Evaporated Metal Films, which provides optical thin-film coatings for a broad range of markets.
- 1,'08 Acquired the optical filter equipment business and customer list of Precision Optics.
- 7,'08 Acquired Radiation Monitoring Devices (RMD) and certain assets of RMD Instruments for medical imaging, environmental sensing, and quality control markets.
- 9,'09 Established a Commercialization Advisory Board to facilitate commercialization of the research and technology portfolio with Ken Morse, the recently retired Managing Director of the MIT Entrepreneurship Center, as the lead advisor.
- 7,'10 Acquired Hilger Crystals to gain a commercial-scale manufacturing facility for scintillator crystals that are used in radiation detectors and to secure a foothold in baggage scanners.

## ... AND SUCCESS IN INTEGRATING OPERATIONS

Under the direction of CEO Craig Dunham, Dynasil has built a profitable business through internal product development and complementary acquisitions. The striking progress is charted in Figure 1.

**Figure 1. Dynasil's Performance Enhanced by Strategic Acquisitions**



Source: Dynasil's 10K documents

Between fiscal 2004 and 2007, revenue and net income increased from \$2.3 million and \$176,000, respectively, to \$10.8 million and \$542,000, as operations expanded from 17 employees to 80 and the customer base increased from about 150 to more than 400. The acquisition of Optometrics in March 2005 and Evaporated Metal Products in October 2006 added complementary products and boosted corporate sales and profitability. During this period, the Company's product line included components for analytical instruments (lenses, diffraction gratings, mirrors, and filters) and lasers (beam splitters, laser optics, and gratings). Dynasil also sold an instrument for measuring the "sun protection factor" in sunscreens. However, it closed fiscal 2007 with no patents or patent applications pending.

Fiscal 2008 and 2009 were noteworthy for two events. First, Dynasil acquired Radiation Monitoring Devices (RMD), a contract research company conducting a significant amount of work for the U.S.

government, and certain assets of a related company, RMD Instruments, on July 1, 2008. This expanded the product line with the inclusion of components and instruments for medical imaging, environmental sensing, and quality control markets. Hand-held analyzers for lead paint and medical probes for cancer surgery with the potential to improve surgical outcomes provided immediate sources of sales and profits, but it was the contract research work that had the greatest transformational impact. The other important event of the 2008 – 2009 period was much more subtle in that it involved a change in patent strategy. The number of patents filed was significantly increased, and the patents made broader claims. While many still have yet to be issued, fiscal 2009 closed with 26 patents granted, 4 patents awaiting issuance, and 30 patents in the application process. We estimate this fiscal year will close with approximately 220 employees, sales of about \$41 million, and a net profit of \$2.6 million.

## RECENT OPERATING PERFORMANCE

	9 mos FY'09	9 mos FY'10
<b>Sales</b>	\$25,883	\$31,495
<b>Cost of sales</b>	\$15,643	\$18,669
<b>Gross profit</b>	\$10,240	\$12,826
<b>SG&amp;A</b>	\$8,132	\$9,312
<b>Income from Operations</b>	\$2,108	\$3,514
<b>Interest expense, net</b>	\$567	\$457
<b>Pretax income</b>	\$1,541	\$3,057
<b>Income tax expense</b>	\$388	\$1,082
<b>Net Income</b>	\$1,153	\$1,975
<b>Profit Margins</b>		
<b>Gross</b>	39.6%	40.7%
<b>Operating</b>	8.1%	11.2%
<b>Pretax</b>	6.0%	9.7%
<b>Net</b>	4.5%	6.3%

Today, Dynasil operates two business segments, Products & Instruments and Contract Research Services. The benefits of recent strategic decisions are apparent in its performance in the first nine months of fiscal 2010 (ends September 30, 2010). Sales increased 22%, to more than \$31 million, with both business segments contributing to the growth. Contract Research Service revenue jumped 17.2%, to \$17.37 million, while the Products & Instruments division generated \$14.13 million, or 27.7% more than in fiscal 2009.

The corporate gross margin widened modestly to 40.7%, versus 39.6% a year ago. And, the operating margin expanded even more so, to 11.2% from 8.1%, as income from the Products & Instruments segment more than doubled, while profits from the Contract Research Service advanced 12%, slightly slower than revenue growth. We believe further operating leverage will be achieved as volume increases with new products contributing.

Debt repayments cut Dynasil's interest expense by more than \$100,000. This helped lift the pretax margin to 9.7% from 6.0% a year earlier. A higher effective tax rate (35.4% versus 25.2%) partially offset the improvements elsewhere, resulting in a net profit margin of 6.3%, up 40% from a year ago. (In fiscal 2009, the Company utilized the last of its net operating loss carryforwards to reduce its tax rate.) Nonetheless, net income rose 71.3% in the first three quarters of the current fiscal year, while fully-diluted share earnings more than doubled, to \$0.13, despite 19% more stock outstanding.

## PROTECTING AGAINST RADIOACTIVE MATERIALS

One might argue that the world is a far safer place today than it was when the United States and the Soviet Union were vying for dominance in the nuclear era. However, some government officials may well disagree. While the creation of weapons-grade materials certainly could have had disastrous results, it also generated an isotope, helium-3, that enabled the detection of neutron radiation. This isotope has played a crucial role in the Department of Homeland Security's Radiation Portal Monitor program, which uses helium-3 based neutron detectors to prevent weapons containing uranium, plutonium, and other heavy metals from entering the country. According to recent testimony by Dr. William Hagan, Acting Director of the Domestic Nuclear Detection Office at the Department of Homeland Security, the government is striving to reduce its dependence on this rare isotope, as availability (stockpiles and production capacity) is severely limited.<sup>1</sup> The impending shortfall, which was first identified in 2008, is expected to impact the availability of neutron detectors worldwide, starting in fiscal 2011, if alternative materials are not commercialized.

Dynasil has an elegant solution to the radiation detection problem. The Company's RMD subsidiary has a long history of conducting research under contracts with the federal government, and one of its ongoing programs involves the production of new materials, scintillators, for detecting both gamma ray and neutron radiation.

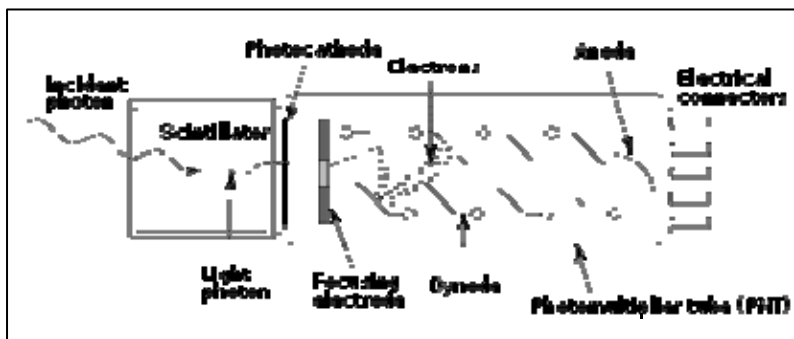
### SCINTILLATION DETECTORS

Modern radiation spectrometry started in the 1940s when Nobel Laureate Robert Hofstadter created a gamma camera using a crystal of sodium iodide doped with thallium [NaI(Tl)]. This unique material, known as a scintillator, is highly efficient in converting radiation into detectable light.

A scintillator is a material that emits a small flash of light when hit by radiation such as gamma rays, neutrons, alpha particles, or beta particles. The light is produced because the scintillation material undergoes phase transitions, first to an excited state upon absorbing the incoming energy and then, back to a resting state, which results in a release of energy as light.

The basic scintillation detector is shown in Figure 2. The scintillator is coupled to a very sensitive light detector such as the photomultiplier tube in the figure, which amplifies the electronic signal.

**Figure 2. Diagram of a Scintillator and Photomultiplier Tube**



Source: [www.wikipedia.org](http://www.wikipedia.org)

### ABOUT SCINTILLATOR MATERIALS

Radiation detectors fall into basically one of two categories of materials, semiconductors and scintillators. Each has certain characteristics that are attractive, but by far, scintillators are the more commonly used due to durability, size, and cost advantages.

<sup>1</sup> Kagan, W.K. Caught by surprise: Causes and consequences of the helium-3 supply crisis. Opening statement before the House Committee on Science and Technology, Subcommittee on investigations and oversight, April 22, 2010.

Scintillators are characterized by many factors, the most important of which is energy resolution, a measure of its ability to distinguish between materials that emit radiation. Higher-performing scintillators have lower energy resolutions on a percentage (%) basis. Besides energy resolution, other performance characteristics for scintillators include:

- **Light Output:** The light emitted by a material for a given amount of radiation energy.
- **Response Time:** How quickly the light is made after radiation exposure – and how quickly the light fades away following exposure.
- **Stopping Efficiency:** How well the scintillator captures radiation as it passes through the material. Generally, higher efficiencies mean less scintillator material is needed.
- **Proportionality:** The uniformity of a scintillator's light output for a given range of radioactive materials.
- **Transparency:** Once light is created, how much of that light is absorbed by the material itself before it can be detected. A crystal that blocks all or most of the light that it creates, for example, is not useful as a scintillator.

Other factors determine the commercial acceptance of a scintillator. The ease of growing a crystal of suitable size is important, particularly when large/very sensitive detectors are required. Scintillator crystals are formed for specific purposes and their performance characteristics depend on both their composition and the process used to form them. Some crystals (e.g., germanium) have very favorable properties that are offset by such limitations as a need to be cooled below room temperature. The availability of highly purified materials in sufficient quantities is equally important, as even small impurities can alter performance characteristics significantly. Finally, cost is always a consideration – indeed, the low cost of producing NaI(Tl), in the \$1 – \$5 per cubic centimeter range, has helped the first scintillator ever commercialized to remain widely used for detecting gamma radiation.

### DYNASIL'S INNOVATIVE SCINTILLATION MATERIALS

The radiation detectors that have been the mainstay of the Department of Homeland Security have required two separate detectors – one for gamma rays, based on NaI(Tl), and the other for neutrons, using helium-3. (See Figure 3 on the next page.) Dynasil's research has yielded two advanced materials that detect both forms of energy and can be used to identify the nature of the source. The latter capability is important, because detectors in use today have limited success in differentiating between an innocuous source, such as kitty litter, fertilizer, and television sets, and a deadly weapon. (The innocuous sources emit radiation because they contain small quantities of such naturally occurring radioactive elements as thorium and potassium.) The ability to make this distinction will improve effectiveness, while saving time and money in screening the shipments that pass through the 327 official ports of entry into the United States. This is no small task, as more than 330,000 vehicles, 57,000 trucks/containers, 2,450 aircraft, and 580 ships arrive daily.

Dynasil has been working to improve the manufacture of crystals of two known scintillators, strontium iodide [SrI<sub>2</sub>(Eu)] and another dubbed CLYC [Cs<sub>2</sub>LiYCl<sub>6</sub>(Ce)], under Homeland Security contracts totaling \$8 million. The former is a scintillator for gamma radiation with properties that exceed those of NaI(Tl), including response linearity, brightness, energy resolution, and response time. Dynasil recently won an award for its work on this project. CLYC is also attracting considerable attention, since the Company's enriched crystals are 2 to 3 times more sensitive to neutrons than is helium-3, and it performs better than NaI(Tl) in detecting gamma radiation (energy discrimination of 4-4.5% at 662 keV, versus about 8.7% for the older compound). The manufacturing process uses trade secrets, and the Company has several patents either granted or in the application process.

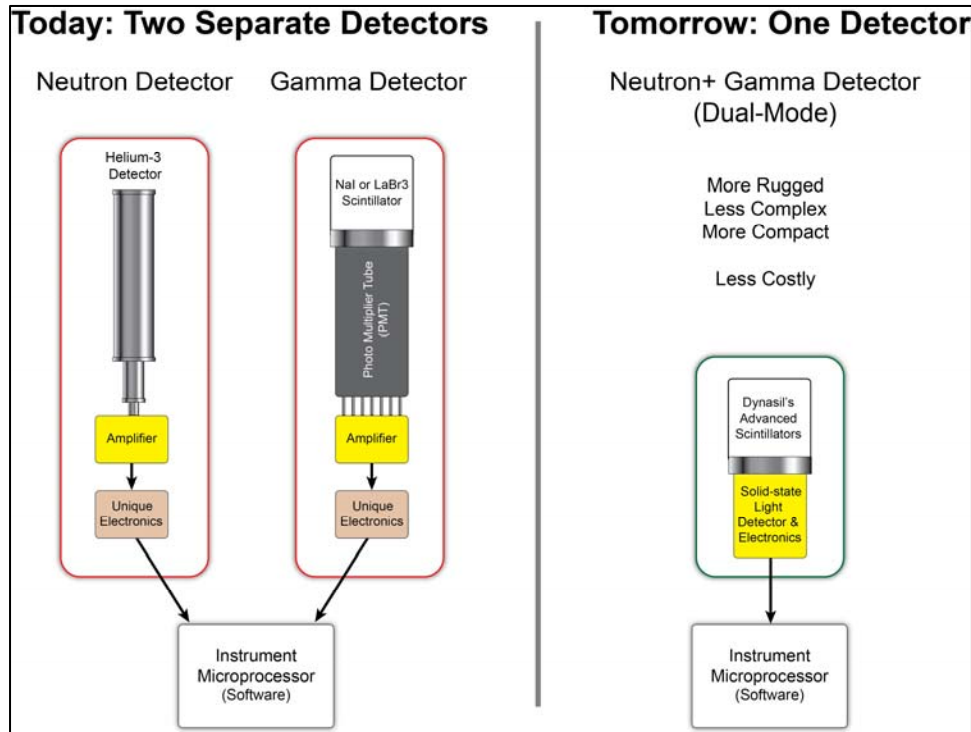
#### Chemical Symbols Related to Scintillators

Br - bromine	Cs - cesium	Li - lithium
Ce - cerium	Eu - Europeum	Sr - strontium
Cl - chlorine	I - iodine	Y - yttrium

In addition, Dynasil has developed a proprietary family of scintillator compounds. This family extends scintillation material performance beyond the properties of CLYC. Specifically, they exhibit an improved ability to differentiate the nature of the radioactive source and at a much lower cost than current scintillator crystals on the market.

Overall, the various properties of Dynasil’s scintillators permit smaller, less costly devices with improved detection capabilities. Detectors using dual gamma/neutron scintillators will solve the helium-3 availability problem and avoid problems associated with vibrations that can afflict some designs. In addition, they will operate on smaller power sources that are lighter and less bulky than those in use today.

**Figure 3. A Comparison of Detector Technologies**



Source: Dynasil Corporation

**THE RADIATION DETECTION MARKET**

The Radiation Portal Monitor program has achieved considerable success in screening containers and vehicles entering the United States since the formation of the Department of Homeland Security in 2003. In testimony before a Congressional subcommittee on April 1, 2009, Jayson Ahern, Acting Commissioner of U.S. Customs and Border Protection, stated that these monitors scan about 98% of the shipping containers entering U.S. maritime ports, 96% of trucks at Northern land border crossings, and 100% of those at Southern border crossings. The screening process relies on several complementary devices for detecting radioactivity that range in size from pager-size gamma detectors that inspectors use to search containers to large-panel stations that scan entire vehicles as they pass through at speeds of about 5 miles per hour. Though generally effective, these devices have shortcomings and rely on helium-3 to identify neutron radiation.

In 2006, the Department of Homeland Security began to prepare for implementation of an Advanced Spectroscopic Portal system that would utilize new technology to improve the detection and source identification of radiation sources, thereby reducing the operating costs and speeding up the overall screening procedure. The National Academy of Sciences recommended continuing the use of multiple, complementary devices and performing upgrades in an iterative manner. This process will present several opportunities for Dynasil to participate, as the market for radiation detectors is now segmented by

size and purpose. Just as important, the cost of the planned improvements to the radiation monitoring systems used for monitoring trucks, containers and other large items was estimated at \$2.1 billion. In its budget request for fiscal 2011, the Department of Homeland Security asked for \$36 million to begin purchases to implement the upgrades. We believe most of this money will be dedicated to technology that reduces the demand for helium-3.

### DYNASIL'S COMMERCIALIZATION STRATEGY

Dynasil is ready to compete in market segments that have the potential to generate sales in the range of \$14 million to \$25 million per year. This preparedness is defined by its ability to manufacture scintillator crystals of the appropriate size for devices in the handheld and pager-sized markets. But rather than attempting to serve all segments initially, the Company is focusing on the two largest, spectroscopic handhelds and pager-sized radiation detectors.

The Company has already entered into discussions to supply its scintillators to major detector manufacturers to expedite its products' commercial use. We believe the first product that will reach the market in fiscal 2011 (begins October 1<sup>st</sup>) will replace the detection units in today's spectroscopic handheld detectors. These replacement products will be designed to fit the existing devices' architectures, which is consistent with the Department of Homeland Security's plans to use new scintillators initially in smaller detectors while maintaining the existing large helium-3 detectors as long as possible. Dynasil has not announced with whom it has had discussions, but we note that ICX Technologies participates in that market segment. Another scintillator product that probably will be launched in fiscal 2011 will be designed to upgrade personal radiation detectors. Thermo Fisher Scientific is the leading supplier, accounting for 55%-60% of the units sold per year.

Participation in the smaller markets that its crystals are already sized appropriately to serve should come in time. But entry into the backpack sector will likely depend on the Company's ability to grow larger crystals. This would also be a prerequisite to reaching the radiation portal monitor and advanced spectroscopic portal markets, though changes to the design of those detectors may also be necessary.

### A KEY ACQUISITION SECURES MANUFACTURING CAPACITY

On July 15<sup>th</sup>, Dynasil announced that it acquired Hilger Crystals, a company in the United Kingdom with expertise in manufacturing inorganic scintillator and infrared optical crystals. We believe this was a savvy move for several reasons. First, the Company needs additional capacity to compete in the commercial market for radiation detectors. Just as important, growing crystals is as much an art as it is a science, so finding a suitable acquisition candidate was not a simple task. And finally, the deal was priced right, at \$4 million plus a \$750,000 payment contingent on revenue for the first 18 months. This means the acquisition should be immediately accretive, since Hilger is expected to do about \$4 million in business in its first year and is positioned to support the commercialization of Dynasil's scintillator crystals.

Approximately 75% of Hilger's existing business is related to bulk crystal scintillator production and 25%, to optical crystals used in infrared spectrometers. However, it is a qualified supplier for a new baggage and scanning system that may generate incremental sales in excess of \$1 million in calendar 2011. Moreover, the newcomer should help RMD's own commercialization plans by supporting the production of its extensive portfolio of scintillator products within the government-funded research. Hilger currently has 55 crystal furnaces that may be a long-term option for producing large scintillator crystals, and it has six smaller furnaces. Dynasil intends to purchase additional furnaces for the dual-mode scintillator crystals.

The acquisition has been financed with a new line of credit. Dynasil recently secured a financial package with Sovereign/Santander Bank consisting of a \$5 million acquisition-related credit line, a \$3 million working-capital line of credit, and a \$9 million, 5.58% term loan, which replaces all outstanding debt. Thus, the Company has the financial wherewithal to execute its operating plan for scintillator crystals and to make additional strategic steps.

## THE PRODUCTS & INSTRUMENTS SEGMENT

This portion of Dynasil's business is comprised of four units that are engaged in manufacturing, Dynasil Optical Materials, Optometrics, Evaporated Metal Films, and RMD Instruments. Each has contributed individually to the Company's solid performance in past years with products based on their own technologies. Today, the Company produces an array of optic/photonic and electronic components for original equipment manufacturers that serve a wide range of markets. For instance, Optometrics sells advanced components to OEMs and catalog companies for use in wavelength selection applications found in analytical chemistry, life sciences, telecom, physics, education, space sciences instrumentation and other applications where high quality optics are key. Similarly, Evaporated Metal Films provides thin-film coatings for display systems, instrumentation, satellite communications and lighting. The product line includes eight reflective coatings (e.g., aluminum, copper, gold, and silver), anti-reflective coatings (e.g., beam splitters for telepropters and solar energy concentrator coatings) and other coatings for such purposes as neutral density filters and etching mirrors. These products generate a healthy level of business, but we consider the Company's own instruments to be of particular importance to future profit growth.

### IMPROVING THE OUTCOME OF CANCER SURGERIES

Dynasil has developed medical probes for use during cancer surgery that can significantly improve patient outcomes by enabling the physician to identify cancerous tissue and to accurately stage cancer progression in a minimally invasive manner. Previously, surgeons had to rely on images taken prior to surgery and physical landmarks to determine the area(s) that should be excised. The introduction of small hand-held probes, similar to the one pictured in the center panel of Figure 4, has enabled physicians to visualize in real time solid tumors more accurately.

Dynasil offers seven probes, including lymphatic mapping, thoracic, abdominal, and gamma-PET, for use with its base unit, the Navigator (shown in the left panel of Figure 4). This instrument may be used with probes designed to detect radioactive tracers that can either define the borders of a tumor (e.g., the gamma-PET probe) or determine which lymph nodes are connected to a tumor (e.g., lymphatic mapping probe that has helped prevent unnecessary tissue resections in breast cancer patients). The latest model, which is used during lung surgery, is expected to be a respectable source of revenue in fiscal 2011, partly because it will expand the use of the more than 3,100 Navigator units in hospitals worldwide.



**Figure 4.** The Navigator base unit, shown in the left panel, is a multifunctional system used with various probes during surgery. One example of a probe, which is shown in the center panel, is the gamma-PET probe that enables surgeons to assess the location of a tumor's boundaries during surgery, rather than rely on images taken prior to surgery. The right panel is an example of an image of a tumor detected with the gamma-PET probe.

Source: Dynasil Corporation

**PROTECTING AGAINST SUN EXPOSURE.**

Among Dynasil’s health care-related instruments is a spectrophotometer used to assess the sunscreen protection factor (SPF) content of lotions, creams, cosmetics, and fabrics. The instrument (see Figure 5), which reduces the need for *in vivo* testing, is used by more than 200 manufacturers worldwide. The latest model offers automated data analysis and reporting.

**Figure 5. SPF-290S Analyzer System**



Source: Dynasil Corporation

**PREVENTING EXPOSURE TO LEAD IN THE ENVIRONMENT**

Another source of revenue growth over the next few years will likely be a next-generation lead paint analyzer. This product, which utilizes the same x-ray fluorescence technology that the Company incorporated in its award-winning LeadTracer RoHS instrument, is set to benefit from new safety regulations governing the renovation of buildings constructed prior to 1978. These analyzers rely on a small radioactive energy source, cobalt-57, and solid state cadmium telluride sensor to measure metals present within a controlled depth of interrogation. The LPA-1 XRF lead paint inspection system, shown in Figure 6, relies on point-and-shoot technology that yields a full analysis ready for storage. A portable data recorder facilitates data entry and the generation of reports more efficiently. The durable, lightweight system, which has an 8-hour battery life, stores up to 4,000 individual readings. The LPA-1 XRF lead paint inspection system offers the operator three modes that allow the detector to be set to assess lead content relative to local building codes, thereby eliminating any decision making on the part of the contractor/operator.



**Figure 6.** The LPA-1 XRF lead paint inspection system, pictured in the left panel with a portable data recorder, has three modes of operation. In the Quick Mode, the inspection system concludes the measurement as soon as a 95% confidence interval is reached, typically within 2 – 4 seconds.

Source: Dynasil Corporation

Demand for the lead paint inspection system is expected to increase as a result of the Environmental Protection Agency's Renovation, Repair, and Painting Rule that relates to renovation work generally of child-occupied or child-visited buildings constructed prior to 1978.<sup>2</sup> The purpose of the regulation is to minimize hazards associated with renovation work due to the release of lead from painted surfaces. As defined by the Rule, "renovation" pertains to any type of work that disturbs more than 6 square feet of a painted interior surface and more than 20 square feet of a painted exterior surface. The Rule went into effect in April 2010, but lead detectors must meet more stringent requirements as of December 1, 2010. Dynasil has designed its instrument to meet the new demands in a user-friendly manner. Such factors, plus an increase in the number of inspectors to satisfy the Rule and a gradual improvement in the real estate markets, should stimulate demand for the LPA-1 XRF over the next few years. Once these instruments enter the field, the Company will benefit from repeat business stemming from the need to replace the cobalt-57 every 15 to 18 months.

Given the new products, we estimate that the Products & Instruments segment will post sales of \$26 million in fiscal 2011 (including Hilger and Dynasil's new scintillators), versus about \$18 million this fiscal year.

## CONTRACT RESEARCH SERVICES SEGMENT

RMD has been providing research services to the U.S. government for more than 25 years under the Small Business Innovative Research (SBIR) program. This business is won under a competitive bidding process via the submission of proposals in response to government solicitations. Awards are made based on the quality of the proposals and historical R&D work. RMD's good relationship with the government is thus well established. As of the end of fiscal 2009, the Company had a backlog of approximately 2 years of contract work, and that hasn't changed much in the interim.

The SBIR program has served as an important source of business with a fixed net profit margin, and it has developed emerging commercial opportunities over the years since the Company has retained commercial rights. RMD's first contract was for the production of cadmium telluride radiation detector crystals, and work on non-invasive metal detectors for the government led to the development of the LPA-1 XRF. We expect the contract research will remain a significant contributor to revenue. Indeed, our estimates for fiscal 2010 and 2011 include contract research revenue of \$23 million and \$25 million, respectively.

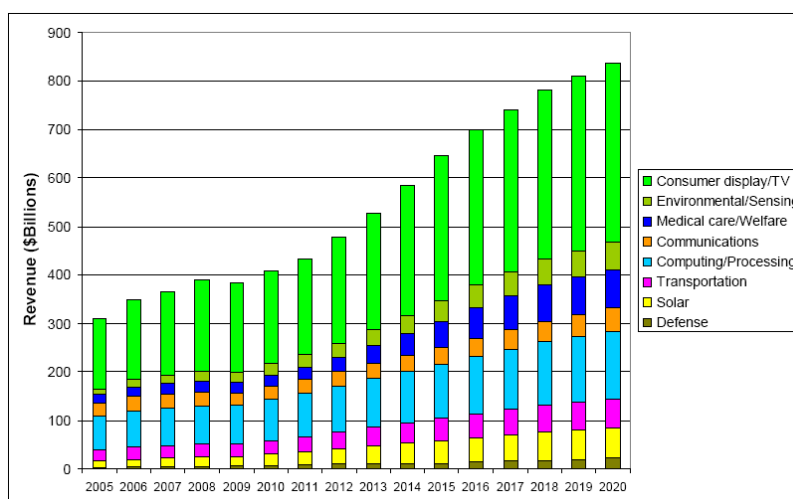
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<sup>2</sup> Environmental Protection Agency 40 CFR Part 745 Lead; Renovation, Repair, and Painting Program. Fed Reg (2008); 73(78): 21692.

## EXPANDING MARKETS & THE R&D PIPELINE

The photonics market is an attractive area for future business development, and Dynasil is well positioned to compete, in our opinion. An industry forecast estimates that annual sales of all photonic products will increase 5.5% per annum between 2009 and 2020, to more than \$1.3 trillion.<sup>3</sup> Within that market are segments that should experience much faster growth, notably photonics-enabled products/systems. And within that area are niches with above average growth prospects, as shown in Figure 7.

**Figure 7. Global Photonics-Enabled Product/System Sales to 2020**



Source: Optoelectronics Industry Development Association<sup>3</sup>

Dynasil is already operating in two sectors with the fastest projected growth, the environmental and medical fields, and it is about to launch new products for defense/homeland security. Moreover, the Company's optics/photonics components are serving another emerging arena, solar energy. We believe the corporate acquisition strategy will help it to remain on the leading edge of technology innovation, which will likely prove crucial as these markets expand. But then, Dynasil is unique for a company its size, as it has a large staff of scientists (39 Ph.D.s) capable of sustaining internal product development. Over the next few years, we believe an important goal of the R&D program is to derive more value from the scintillator platform by creating sophisticated components/instruments for homeland security, industrial uses, and medical applications. The following discussion focuses on various areas of research that have the potential to yield commercial products by 2015.

### MATERIAL SCIENCE

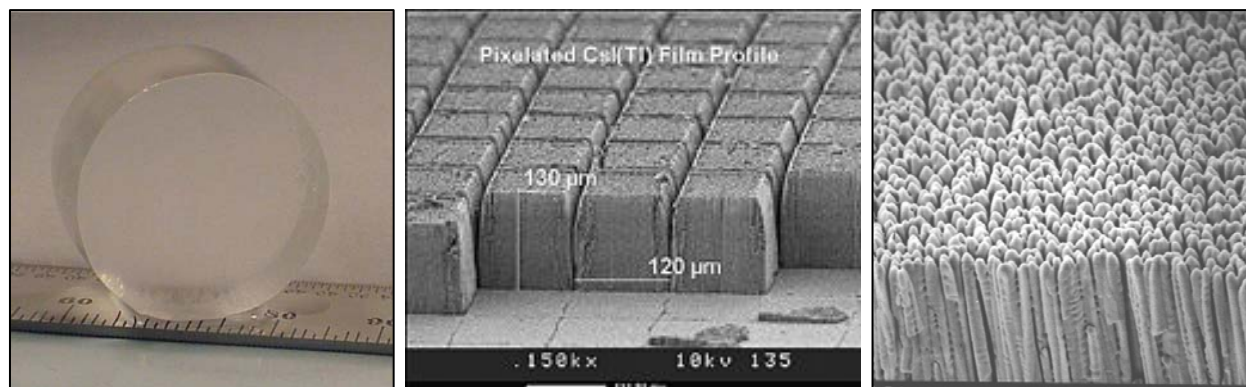
This project includes the development and manufacture of new, high-performance scintillators; alternative materials for radiation detection, including semiconductors and ceramics; and a large area avalanche photodiode, which may offer an alternative to the photomultiplier tube. Combined, these technologies have the potential to greatly expand Dynasil's presence in radiation detection for such markets as homeland security, nuclear power industry, and medical devices. Alone, a large area avalanche photodiode would have even broader potential applications, because of its wide sensitivity range, from the infrared to x-rays with energy up to about 25 keV.

### HIGH-DEFINITION SCINTILLATION DETECTORS

In certain applications, the usefulness of scintillators depends on much more than the materials comprising the crystal. For instance, simply detecting a radiation source would not serve a purpose in instruments used to image objects since the source is already known and the image is the desired result. Digital X-rays and baggage scanners illustrate such applications of scintillator technology. Imaging

<sup>3</sup> OIDA's 2009 Global Optoelectronics Industry Market Report and Forecast.

requires miniature crystals, which combined act like retinal photodetectors (i.e., rods and cones). The scintillator CsI(Tl) is a common material used for these purposes because it has a high density, high atomic number, short response time (resulting in low afterglow), and good transparency to its own light emissions.



**Figure 8.** A comparison of scintillator geometries that Dynasil has produced. Left panel: A 1 inch diameter by 1 inch thick boule of CLYC that is suitable for hand-held radiation detectors. Middle panel: A pixelated scintillation detector crafted from CsI(Tl) with laser micromachining. The pixels are separated by cuts angled to avoid parallax distortion, though that level of detail is not apparent in the photo. Right panel: A microcolumnar array of CsI(Tl) crystals provides the high-resolution imaging necessary for medical applications.

Source: Dynasil Corporation

The new Hilger subsidiary already is an important supplier of scintillation detectors for baggage scanning, as it has developed a technique for slicing scintillator crystals into pixels for imaging applications. Dynasil's approach seems to be more elegant, though. The technology yields a pixelated scintillator (see middle panel of Figure 8) that is created by laser micromachining a crystal surface and then filling the troughs between the individual pixels with an absorbent material, such as lead. This design requires highly precise crafting, because each pixel's axis must be oriented to match the predetermined illumination direction of the radiation beam to avoid a distortion known as parallax. The Company has already demonstrated the feasibility of this technology, and we would not be surprised to see commercial products introduced within our 3 – 5 year time horizon for baggage and other industrial scanners.

Dynasil may combine its expertise in scintillator materials with the capabilities of its Evaporated Metal Films subsidiary to create a similar, but more sensitive detector for medical applications. In this case, simple detectors may monitor an individual's exposure to radiation, while more sophisticated detectors comprised of microcolumnar arrays (see right panel of Figure 8) should have sufficient density to provide highly detailed images. The Company's most advanced scintillators will probably be used in such arrays, since only medical instruments are likely to command the prices needed to warrant the new materials and the high-resolution arrays. Still images that require lower X-ray dosages and the creation of near-3D videos are the potential commercial applications of this technology. The resultant images may be stored and transmitted more readily than X-ray films. Higher-quality videos may extend the use of this technology well beyond baggage scanners.

## INSTRUMENTATION

The R&D pipeline includes instrumentation that has the potential to expand the markets for scintillation materials. We believe that one such area is solid state photomultiplier technology. Development of improved electronic detectors to replace the current vacuum tube technology would enable Dynasil to offer more advanced personal radiation detectors and to provide the subsystem (a single scintillator crystal and electronics for two separate analyzers) that is depicted in Figure 3. This would greatly reduce the sizes of hand-held and back-pack detectors now used by the Department of Homeland Security.

The Company is also developing solid state magnetic field sensors and sensor arrays made from magnetoresistive materials that can be used to detect minute cracks in metals. This technology may have a cost advantage over existing sensors. A collaboration with General Electric is working on a detector for

identifying metal fatigue in such objects as aircraft wings. The goal is to create detectors with greater sensitivity and lower operating costs than those currently available. Another potential application is to evaluate electronic components, particularly those with military applications. All too many products sold to the military do not meet the standards required for high-performance vehicles and weaponry. Dynasil has created a prototype instrument that is able to compare the magnetic and electric fields generated by electronic circuit boards to a standard control circuit. The results provide a sensitive, non-destructive means of evaluating critical components, since the materials used generate fields that are highly specific based on their compositions and locations on the board.

## MEDICAL PROBES

The line of probes used with the Navigator will likely expand over the next few years with the introduction of additional designs for specific types of surgeries and for use with new PET imaging agents. (Note that Dynasil does not develop the probes for use with any specific imaging agent, and as a result, FDA approval has been obtained via a fairly simplified application, a 510k filing.)

In addition, the Company has a team working on the detection and analysis of cells and biomolecules in real time using a combination of microfluidics, electronics, and photonic sensors. A portion of this work is being conducted under a contract with National Aeronautics & Space Administration for the development of a prototype instrument for blood analyses, while the National Institutes of Health is funding research into the diagnosis of infectious diseases.

## COMPETITION

Dynasil faces competition in each of its markets from both large and small companies. Scintillator manufacturers include General Electric (internal use), Hamamatsu Photonics, PhotoPeak, Saint Gobain and Alpha Spectra, though each is distinguished by its crystal manufacturing capability and the end-users served. We believe that Dynasil will compete effectively based on the characteristics of its scintillator crystals and may ultimately count some of the aforementioned competitors as customers, since several also manufacture radiation detectors.

The optic/photonic component market is highly fragmented with numerous companies competing based on the characteristics and prices of their products. Among the instrumentation manufacturers serving the metal detector market (X-Ray Fluorescence, or XRF technology) are Thermo Fisher Scientific, InnovXSystems, QSX Instruments, Brucker, and Oxford Instruments.

The level of competition in the surgical probe market has been growing as physicians have begun to recognize the value of these hand-held gamma detectors. Today, the competitors include NeoProbe, Care Wise Medical Products, Intra-Medical Imaging LLC, SenoRx, and Eurorad S.A. We look for the introduction of more probes to keep Dynasil's sales of this product line on a healthy growth track.

Given the projected expansion of the photonics market over the next 10 years, Dynasil will face newcomers to its targeted markets. Its ability to remain on the leading edge of technology and offer competitive prices will figure importantly determining in its future profit growth.

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## INVESTMENT CONCERNS AND RISKS

For a complete description of risks and uncertainties related to Dynasil Corporation's business, see Dynasil's 10K/Annual reports, which can be accessed from the Company's website, [www.dynasilcorp.com](http://www.dynasilcorp.com). Potential risks include:

- **Stock risk and market risk:** There is a limited trading market for the Company's common stock. There can be no assurance that an active and liquid trading market will develop or, if developed, that it will be sustained, which could limit one's ability to buy or sell the Company's common stock at a desired price. Investors should also consider technical risks common to many small-cap or micro-cap stock investments, such as small float, risk of dilution, dependence upon key personnel, and the strength of competitors that may be larger and better capitalized.
- **Competitive risk:** The optics/photonics market continues to evolve, and research and development are expected to continue. Other companies are already established players in this market and are actively engaged in the development of new products that may directly or indirectly compete with those being pursued by Dynasil. These companies may have substantially greater research and development capabilities, as well as significantly greater marketing, financial, and human resources than the Company.
- **Products still in development phases:** Some of Dynasil's products are still at a precommercialization stage. Such products may appear to be promising, but may not reach commercialization for various reasons, including the inability to be manufactured at a competitive cost. And even if its products are commercialized, there can be no assurance that they will be accepted by end-users, which may prevent the Company from remaining profitable.
- **Acquisitions:** Dynasil has a history of acquiring other companies that have had strategic value, increased sales, and/or improved corporate profitability. There can be no assurance that future deals will be transacted or that they will be consummated at terms that are favorable to current shareholders.
- **Funding requirements:** It is difficult to predict Dynasil's future capital requirements. The Company may need additional financing to continue funding the development of its products, their production, and/or future acquisitions. There is no guarantee that it can secure the desired future capital or, if sufficient capital is secured, that current shareholders will not suffer significant dilution.
- **Patent risk:** The optics/photonics industry is one in which patents have not always provided sufficient protection against competition. There can be no assurance that Dynasil's patents will provide sufficient protection to exclude competitors and that patent litigation will not become a financial burden.

## FINANCIAL ANALYSIS & VALUATION

This analysis is based on the current corporate structure, and as such, does not reflect future acquisitions, since deal sizes, terms, and timing are impossible to predict.

### SOURCES OF REVENUE

Dynasil currently reports its financial results in two segments, Contract Research Services and Products & Instruments. But for our purposes, we've treated the commercial scintillator business, which includes Hilger, separately. As shown in table below, we estimate that fiscal 2010 (ends September 30, 2010) will close with revenue 19% higher than a year ago.

**Table 1. Revenue Projections by Business Segment**

	2009(A)	2010	2011	2012	2013	2014	2015
Contract Research	\$ 19,968	\$ 23,000	\$ 25,300	\$ 27,830	\$ 30,613	\$ 32,144	\$ 33,751
Products & Instruments	\$ 14,395	\$ 17,200	\$ 21,108	\$ 25,904	\$ 31,789	\$ 39,011	\$ 47,875
Scintillators	\$ -	\$ 780	\$ 5,010	\$ 9,942	\$ 14,040	\$ 17,221	\$ 20,404
<b>Total</b>	<b>\$ 34,363</b>	<b>\$ 40,980</b>	<b>\$ 51,418</b>	<b>\$ 63,676</b>	<b>\$ 76,442</b>	<b>\$ 88,376</b>	<b>\$ 102,029</b>

#### Assumptions regarding the Contract Research Segment:

- The 2-year backlog of contracts that the Company had at the end of fiscal 2009 yields 15% revenue growth in 2010.
- Between 2011 through 2013, revenue from contract services increases at an annual rate of 10% per annum.
- In 2014 and beyond, the segment generates annual revenue growth of 5%. This assumption reflects a somewhat conservative stance regarding long-range demand for contract services and the potential for greater competition, and it allows for a transfer of a portion of the Company's R&D capacity from contract services to in-house, commercial projects.

#### Assumptions regarding the Products & Instruments Segment:

- Sales increase nearly 20% in fiscal 2010 as the rebounding economy increases demand for optic and electronic components and the newest medical probe begins to contribute.
- In fiscal 2011, a strengthening economy and the need for replacement parts support sales growth of roughly 23%. Other pluses are further gains by the medical probe line and growing demand for the LPA1-XRF lead detector as inspectors strive to meet the new EPA regulations.
- Between 2011 and 2015, the world economy improves, thereby helping to stimulate demand for Dynasil's products. Part of the demand is attributable to rising standards of living in developing nations. Then, too, new products should debut, given the Company's deep R&D pipeline and determination to commercialize more products from its service contracts. Overall, sales increase 20%-25% per annum. We've assumed that this rate of growth persists to 2025 for purposes of our Discounted Cash Flow Analysis, based on the Company's R&D expertise.

#### Assumptions regarding Scintillators:

- The acquisition of Hilger in the fourth quarter of fiscal 2010 adds nearly \$800,000 in revenue, as the new subsidiary is booking about \$300,000 in sales per month. In fiscal 2011, the newcomer's base business contributes \$4 million, thanks partly to the supply of scintillator crystals for baggage scanners.
- Our projections from 2011 through 2015 reflect approximately 14% annual revenue growth from Hilger's existing business [e.g., CsI(Tl) and optical crystals] as Dynasil leverages its marketing capabilities to support Hilger's products.

- Sales of Dynasil's dual gamma/neutron scintillator crystals account for about \$1 million of business in fiscal 2011, based on an assumption that they will roll out in the first calendar quarter as replacement components for handheld detectors.
- In fiscal 2012, the Company introduces its single-subsystem gamma/neutron detector (as depicted in Figure 3), while demand for its crystals increases. These assumptions reflect the competitive advantages of the high-grade scintillator materials, notably CLYC and SrI<sub>2</sub>(Eu).
- In subsequent years, the production of a greater range of scintillator crystal sizes and forms of crystals (e.g., pixilated crystals) enables Dynasil to compete in a larger proportion of the radiation detector market. Also, the Company introduces more integrated components (i.e., scintillator crystals combined with electronics) that broaden the product line in the environmental, medical instruments, and homeland security markets.

### INCOME STATEMENT (All data is in thousands, except per-share figures.)

(Fiscal year ends on September 30<sup>th</sup>.)

	2010	2011	2012	2013	2014	2015
<b>Total revenue</b>	\$ 40,980	\$ 51,418	\$ 63,676	\$ 76,442	\$ 88,376	\$ 102,029
<b>COGS</b>	23,750	30,560	37,653	45,086	52,060	60,065
<b>Gross profit</b>	\$ 17,230	\$ 20,858	\$ 26,022	\$ 31,357	\$ 36,316	\$ 41,964
<b>SG&amp;A</b>	12,600	14,600	17,500	20,250	23,500	27,000
<b>Total expense</b>	12,600	14,600	17,500	20,250	23,500	27,000
<b>Operating profit</b>	\$ 4,630	\$ 6,258	\$ 8,522	\$ 11,107	\$ 12,816	\$ 14,964
<b>Total non-operating</b>	(615)	(750)	(750)	(750)	(750)	(750)
<b>Pretax profit</b>	\$ 4,015	\$ 5,508	\$ 7,772	\$ 10,357	\$ 12,066	\$ 14,214
<b>Income tax</b>	1,405	1,928	2,720	3,625	4,223	4,975
<b>Net income</b>	\$ 2,610	\$ 3,580	\$ 5,052	\$ 6,732	\$ 7,843	\$ 9,239
<b>Preferred Dividends</b>	\$ 500	\$ 250				
<b>Net for Common</b>	\$ 2,110	\$ 3,330	\$ 5,052	\$ 6,732	\$ 7,843	\$ 9,239
<b>Earnings (loss) per share</b>	\$ 0.17	\$ 0.23	\$ 0.33	\$ 0.43	\$ 0.50	\$ 0.58
<b>Diluted shares outstanding</b>	15000	15250	15500	15750	15750	16000

### Assumptions regarding the Income Statement:

- The gross profit margin remains relatively stable, in the 40%-45% range. We believe this is a conservative assumption as high-grade scintillators (e.g., CLYC) should command premium prices.
- Operating margins continue to widen as Dynasil leverages its administrative and marketing functions with the introduction of more products. This occurs between 2010 and 2012, causing operating profitability to rise from 11% to 15%. By 2013, we've assumed that the Company expands its marketing efforts, resulting in a stable level of profitability through 2025.
- Net non-operating expense changes little.
- The Company's effective tax rate increases to about 35% in 2010 from 26% in 2009, since net operating loss carryforwards have been fully utilized. Thereafter, the tax rate remains fairly stable.
- Preferred dividends are paid through mid-fiscal 2011, when the preferred shares are converted to common.
- The number of diluted shares outstanding increases gradually as Dynasil issues stock options to employees.

**BALANCE SHEET** (All data is in thousands.)(Fiscal year ends on September 30<sup>th</sup>.)

<b>ASSETS</b>	<b>6/30/2010</b>	<b>9/30/2009</b>
Current Assets		
Cash & equivalents	4,002	3,105
Accounts Receivable	4,691	4,054
Inventory	2,183	2,372
Other	772	597
Total Current Assets	\$ 11,648	\$ 10,127
Property & equipment	\$ 2,641	\$ 2,745
Intangible assets	17,875	18,286
Other	54	65
<b>Total Assets</b>	<b>\$ 32,218</b>	<b>\$ 31,223</b>
<b>LIABILITIES</b>		
Current Liabilities		
Accounts payable	\$ 870	\$ 774
Debt due	3,848	1,750
Other	2,286	1,828
Total Current Liabilities	\$ 7,004	\$ 4,351
Long-term debt	\$ 4,686	\$ 6,387
Other	-	2,000
Total Long-Term Liabilities	\$ 4,686	\$ 8,387
Shareholders Equity		
Preferred Stock	\$ 5	\$ 6
Common Stock, par value	\$ 6	\$ 6
Additional Paid-In Capital	17,003	16,364
Retained Earnings	4,500	3,094
Treasury Stock	(986)	(986)
Total Shareholders Equity	\$ 20,528	\$ 18,485
<b>Total liabilities &amp; equity</b>	<b>\$ 32,218</b>	<b>\$ 31,223</b>

**DISCOUNTED CASH FLOW ANALYSIS** (All data is in thousands, except per-share figures.)

	2010	2011	2012	2013	2014	2015
Revenue	\$ 40,980	\$ 51,418	\$ 63,676	\$ 76,442	\$ 88,376	\$ 102,029
Operating income	4630	6258	8522	11107	12816	14964
Net income	2610	3580	5052	6732	7843	9239
Depreciation/amortization	1050	1100	1100	1100	1100	1100
Stock-based compensation	240	250	250	275	275	300
Tax loss carryforwards	0	0	0	0	0	0
Capital expenditures	-350	-600	-600	-700	-700	-700
Asset purchases						
Other						
Total cash flow adjustments	940	750	750	675	675	700
Free cash flow	\$ 3,550	\$ 4,330	\$ 5,802	\$ 7,407	\$ 8,518	\$ 9,939
Risk-adjusted free cash flow	\$ 2,920	\$ 3,566	\$ 4,758	\$ 6,067	\$ 6,986	\$ 8,161

Discount Rate	Discounted Cash Flows (2008 - 2023)	PV of Terminal Value at a					
		Perpetual growth rate of rFCF			Enterprise Value		
		2.0%	3.0%	4.0%	2.0%	3.0%	4.0%
7.5%	\$103,404.10	\$ 223,916	\$ 276,358	\$ 358,767	\$327,320	\$379,762	\$462,171
10.0%	\$82,180.28	\$ 109,042	\$ 125,841	\$ 148,240	\$191,222	\$208,021	\$230,420
12.5%	\$66,318.50	\$ 59,306	\$ 66,191	\$ 74,697	\$125,624	\$132,510	\$141,015
15.0%	\$54,306.86	\$ 34,448	\$ 37,684	\$ 41,509	\$88,755	\$91,991	\$95,816
17.5%	\$45,093.35	\$ 20,925	\$ 22,588	\$ 24,497	\$66,019	\$67,681	\$69,590

Discount Rate	Net Debt	Total Equity Value			Value per Diluted Share		
		2.0%	3.0%	4.0%	2.0%	3.0%	4.0%
		7.5%	\$ 4,532	\$322,788	\$375,230	\$457,639	\$20.17
10.0%	4,532	\$186,690	\$203,489	\$225,888	\$11.67	\$ 12.72	\$ 14.12
12.5%	4,532	\$121,092	\$127,978	\$136,483	\$7.57	\$ 8.00	\$ 8.53
15.0%	4,532	\$84,223	\$87,459	\$91,284	\$5.26	\$ 5.47	\$ 5.71
17.5%	4,532	\$61,487	\$63,149	\$65,058	\$3.84	\$ 3.95	\$ 4.07

Discount Rate	Terminal Value as % Enterprise Value			Implied EBITDA Multiple		
	2.0%	3.0%	4.0%	2.0%	3.0%	4.0%
	7.5%	68.4%	72.8%	77.6%	11.89	14.67
10.0%	57.0%	60.5%	64.3%	8.17	9.43	11.11
12.5%	47.2%	50.0%	53.0%	6.23	6.95	7.84
15.0%	38.8%	41.0%	43.3%	5.03	5.50	6.06
17.5%	31.7%	33.4%	35.2%	4.22	4.55	4.94

**Assumptions related to the Discounted Cash Flow Analysis:**

- The DCF model projects cash flow through 2025, discounted back at multiple annual rates (7.5%, 10.0%, 12.5%, 15.0%, and 17.5%) to demonstrate the potential variability related to this assumption. It also includes three perpetual growth rates (2%, 3%, and 4%) to show the impact on the present value of the company's terminal value. The rates used in calculating the per-share value for Dynasil Corporation are a 12.5% annual discount rate and a perpetual growth rate of 3%. The number of fully-diluted shares estimated to be outstanding in 2015, 16.0 million, is used in the per-share calculation.
- The cash flows are risk adjusted, based on the proportional gross profit contribution by each business segment on an annual basis and the probability of that business segment achieving our projections. The following probabilities were assigned: Contract R&D Services, 80%; Products & Instruments, 85%; Scintillators, 75%.

## COMPARATIVE VALUATION

We performed a comparative valuation analysis based on *pro forma* data for Dynasil that includes Hilger. This was accomplished by comparing Dynasil's current valuation with those of 10 companies with similar businesses. Two methods were employed, one comparing a company's market capitalization to its most recent 12-month sales and the other in which the market cap was compared to EBITDA. The average market cap-to-revenue ratio and market cap-to-EBITDA ratios were then used to calculate predicted market caps for Dynasil. Share prices for the Company were then obtained by dividing its predicted valuation by the actual number of its shares outstanding (12.67 million) as of August 16, 2010, the date of the most recent 10Q filing.

Company	Business	Ticker	Market Cap*	12-Month Rev's*	MC/Rev's	12-Month EBITDA*	MC/EBITDA Ratio
<b>Dynasil Corporation</b>		<b>DYSL</b>	<b>\$40.3</b>	<b>\$37.2</b>	<b>1.08</b>	<b>\$4.57</b>	<b>8.82</b>
CVD Equipment Corp.	Electronic components	CVV	\$16.7	\$10.3	1.62	\$0.95	17.62
CyberOptics	Optical sensors	CYBE	\$59.3	\$46.4	1.28	\$0.31	NA
FARO Technologies	Imaging systems for construction & industrial apps	FARO	\$311.9	\$169.7	1.84	\$15.82	19.71
ICx Technologies	Homeland security sensors	ICXT	\$266.9	\$176.6	1.51	\$5.36	NA
IMRIS Corporation	Surgical imaging	TSE: IM	\$126.5	\$59.1	2.14	\$1.45	NA
Measurement Specialties	Sensors sold to OEMs	MEAS	\$227.0	\$227.1	1.00	\$33.37	6.80
MOCON	Monitoring & analytical inst.	MOCO	\$57.0	\$28.9	1.97	\$5.54	10.29
Nova Measuring Instruments	Metrology systems	NVMI	\$139.2	\$62.1	2.24	\$12.90	10.79
Photonics Product Group	Optical components & lasers	PHPG	\$11.6	\$11.0	1.05	\$0.15	NA
Spectrum Control	Electronic components	SPEC	\$170.6	\$143.2	1.19	\$21.08	8.09
<b>Average Market Cap/Rev's:</b>					1.58		
<b>Predicted Market Cap for DYSL:</b>					\$58.92		
<b>Calculated share price:</b>					\$4.65		
<b>Average Market Cap/EBITDA :</b>					12.22		
<b>Predicted Market Cap for DYSL:</b>					\$55.83		
<b>Calculated share price:</b>					\$4.41		
* in millions							

We constructed the peer group of companies engaged in businesses that relate to Dynasil's different commercial endeavors, specifically, crystal manufacturing, optics/photonics, electronic components, monitoring and inspection instruments, and homeland security detectors. Furthermore, we limited the group to companies with revenue and market capitalizations in the range of roughly \$10 million to \$325 million. No consideration was given to profitability, even though Dynasil is profitable and generating excess cash flow. This resulted in a peer group of 10 companies for the revenue-based analysis and six for the EBITDA-based analysis.

The results indicate that Dynasil is significantly undervalued relative to its peers today. The peer group is valued on average at 1.58 times revenue, versus Dynasil's 1.08. Similarly, the Company's market cap-to-EBITDA ratio of 8.82 is well below that of the peer group's 12.22. When the average ratios of the peer group were used to calculate predicted valuations, the results indicated that Dynasil's current share price should be in the range of \$4.40-\$4.65, or approximately 40% higher than its recent valuation.

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## PRICE CHART – 2 Year



8/19/10 – Initiating Coverage: share price: \$3.20; rating: BUY; 12-month price target: \$8.00.

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