

**UNITED STATES  
SECURITIES AND EXCHANGE COMMISSION**

Washington, D.C. 20549

**FORM 10-Q**

(Mark One)

**QUARTERLY REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the quarterly period ended June 30, 2019

OR

**TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from \_\_\_\_\_ to \_\_\_\_\_

Commission file number: 001-36481

**ASPEN AEROGELS, INC.**

(Exact name of registrant as specified in its charter)

**Delaware**

(State or other jurisdiction of  
incorporation or organization)

**30 Forbes Road, Building B  
Northborough, Massachusetts**  
(Address of principal executive offices)

**04-3559972**

(I.R.S. Employer  
Identification No.)

**01532**

(Zip Code)

**Registrant's telephone number, including area code: (508) 691-1111**

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol	Name of exchange on which registered
Common Stock	ASPN	The New York Stock Exchange

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days.

Yes  No

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes  No

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer   
Non-accelerated filer

Accelerated filer   
Smaller reporting company   
Emerging growth company

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 13(a) of the Exchange Act.

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes  No

As of July 31, 2019, the registrant had 24,300,264 shares of common stock outstanding.

ASPEN AEROGELS, INC.

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**Trademarks, Trade Names and Service Marks**

We own or have rights to use "Aspen Aerogels," "Cryogel," "Pyrogel," "Spaceloft," the Aspen Aerogels logo and other trademarks, service marks and trade names of Aspen Aerogels, Inc. appearing in this Quarterly Report on Form 10-Q. Solely for convenience, the trademarks, service marks and trade names referred to in this report are presented without the ® and TM symbols, but such references are not intended to indicate, in any way, that the owner thereof will not assert, to the fullest extent under applicable law, such owner's rights to these trademarks, service marks and trade names. This report contains additional trademarks, service marks and trade names of other companies, which, to our knowledge, are the property of their respective owners.

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PART I — FINANCIAL INFORMATION

Item 1. Financial Statements.

ASPEN AEROGELS, INC.  
 Consolidated Balance Sheets  
 (Unaudited)

	June 30, 2019	December 31, 2018
	(In thousands, except share and per share data)	
<b>Assets</b>		
Current assets:		
Cash and cash equivalents	\$ 3,322	\$ 3,327
Accounts receivable, net of allowances of \$2,661 and \$2,877	22,166	25,565
Inventories	13,099	7,318
Prepaid expenses and other current assets	1,320	1,041
Total current assets	39,907	37,251
Property, plant and equipment, net	57,319	61,699
Operating lease right-of-use assets	4,461	—
Other long-term assets	75	73
Total assets	<u>\$ 101,762</u>	<u>\$ 99,023</u>
<b>Liabilities and Stockholders' Equity</b>		
Current liabilities:		
Accounts payable	\$ 10,028	\$ 12,392
Accrued expenses	4,045	3,864
Revolving line of credit	2,885	4,181
Deferred revenue	6,915	2,629
Operating lease liabilities	1,057	—
Total current liabilities	24,930	23,066
Deferred rent	—	1,218
Prepayment liability	9,784	4,485
Deferred revenue long-term	1,942	—
Operating lease liabilities long-term	4,762	—
Total liabilities	41,418	28,769
Commitments and contingencies (Note 7)		
Stockholders' equity:		
Preferred stock, \$0.00001 par value; 5,000,000 shares authorized, no shares issued and outstanding at June 30, 2019 and December 31, 2018	—	—
Common stock, \$0.00001 par value; 125,000,000 shares authorized, 24,300,264 and 23,973,517 shares issued and outstanding at June 30, 2019 and December 31, 2018, respectively	—	—
Additional paid-in capital	543,249	541,839
Accumulated deficit	(482,905)	(471,585)
Total stockholders' equity	60,344	70,254
Total liabilities and stockholders' equity	<u>\$ 101,762</u>	<u>\$ 99,023</u>

See accompanying notes to unaudited consolidated financial statements.

**ASPEN AEROGELS, INC.**  
**Consolidated Statements of Operations**  
(Unaudited)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
(In thousands, except share and per share data)				
<b>Revenue:</b>				
Product	\$ 28,908	\$ 21,115	\$ 55,693	\$ 43,636
Research services	625	556	1,752	1,109
Total revenue	<u>29,533</u>	<u>21,671</u>	<u>57,445</u>	<u>44,745</u>
<b>Cost of revenue:</b>				
Product	25,715	18,676	49,193	38,699
Research services	304	251	1,020	492
Gross profit	<u>3,514</u>	<u>2,744</u>	<u>7,232</u>	<u>5,554</u>
<b>Operating expenses:</b>				
Research and development	1,868	1,638	3,796	3,243
Sales and marketing	3,509	3,721	7,020	7,220
General and administrative	3,352	4,240	7,592	8,696
Total operating expenses	<u>8,729</u>	<u>9,599</u>	<u>18,408</u>	<u>19,159</u>
Loss from operations	<u>(5,215)</u>	<u>(6,855)</u>	<u>(11,176)</u>	<u>(13,605)</u>
Interest expense, net	<u>(103)</u>	<u>(103)</u>	<u>(144)</u>	<u>(195)</u>
Total interest expense, net	<u>(103)</u>	<u>(103)</u>	<u>(144)</u>	<u>(195)</u>
Net loss	<u>\$ (5,318)</u>	<u>\$ (6,958)</u>	<u>\$ (11,320)</u>	<u>\$ (13,800)</u>
<b>Net loss per share:</b>				
Basic and diluted	<u>\$ (0.22)</u>	<u>\$ (0.29)</u>	<u>\$ (0.47)</u>	<u>\$ (0.58)</u>
<b>Weighted-average common shares outstanding:</b>				
Basic and diluted	<u>24,118,620</u>	<u>23,743,358</u>	<u>24,025,136</u>	<u>23,655,676</u>

See accompanying notes to unaudited consolidated financial statements.

ASPEN AEROGELS, INC.

Consolidated Statements of Stockholders' Equity

(Unaudited)

(In thousands, except share data)

	Preferred Stock \$0.00001 Par Value		Common Stock \$0.00001 Par Value		Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Value	Shares	Value			
<b>Balance at December 31, 2018</b>	—	\$ —	23,973,517	\$ —	\$ 541,839	\$ (471,585)	\$ 70,254
Net loss	—	—	—	—	—	(6,002)	(6,002)
Stock compensation expense	—	—	—	—	878	—	878
Vesting of restricted stock units	—	—	273,290	—	(454)	—	(454)
<b>Balance at March 31, 2019</b>	—	—	24,246,807	—	542,263	(477,587)	64,676
Net loss	—	—	—	—	—	(5,318)	(5,318)
Stock compensation expense	—	—	—	—	996	—	996
Issuance of restricted stock	—	—	50,328	—	—	—	—
Vesting of restricted stock units	—	—	3,129	—	(10)	—	(10)
<b>Balance at June 30, 2019</b>	—	\$ —	24,300,264	\$ —	\$ 543,249	\$ (482,905)	\$ 60,344

	Preferred Stock \$0.00001 Par Value		Common Stock \$0.00001 Par Value		Additional Paid-in Capital	Accumulated Deficit	Total Stockholders' Equity
	Shares	Value	Shares	Value			
<b>Balance at December 31, 2017</b>	—	\$ —	23,643,189	\$ —	\$ 538,088	\$ (437,145)	\$ 100,943
Net loss	—	—	—	—	—	(6,842)	(6,842)
Stock compensation expense	—	—	—	—	1,136	—	1,136
Vesting of restricted stock units	—	—	239,064	—	(504)	—	(504)
<b>Balance at March 31, 2018</b>	—	—	23,882,253	—	538,720	(443,987)	94,733
Net loss	—	—	—	—	—	(6,958)	(6,958)
Stock compensation expense	—	—	—	—	1,150	—	1,150
Issuance of restricted stock	—	—	58,062	—	—	—	—
Vesting of restricted stock units	—	—	—	—	—	—	—
<b>Balance at June 30, 2018</b>	—	\$ —	23,940,315	\$ —	\$ 539,870	\$ (450,945)	\$ 88,925

See accompanying notes to unaudited consolidated financial statements.

**ASPEN AEROGELS, INC.**  
**Consolidated Statements of Cash Flows**  
(Unaudited)

	Six Months Ended	
	June 30,	
	2019	2018
	(In thousands)	
Cash flows from operating activities:		
Net loss	\$ (11,320)	\$ (13,800)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	5,097	5,686
Stock-compensation expense	1,874	2,286
Operating lease right-of-use assets	459	—
Lease incentives	—	(60)
Changes in operating assets and liabilities:		
Accounts receivable	3,399	6,658
Inventories	(5,781)	(3,907)
Prepaid expenses and other assets	(281)	106
Accounts payable	(1,823)	(2,208)
Accrued expenses	332	(1,138)
Deferred revenue	6,627	152
Operating lease liabilities	(470)	—
Other liabilities	(56)	(22)
Net cash used in operating activities	<u>(1,943)</u>	<u>(6,247)</u>
Cash flows from investing activities:		
Capital expenditures	(1,302)	(1,657)
Net cash used in investing activities	<u>(1,302)</u>	<u>(1,657)</u>
Cash flows from financing activities:		
Repayment of borrowings under line of credit, net	(1,296)	—
Prepayment proceeds under customer supply agreement	5,000	5,000
Payments made for employee restricted stock tax withholdings	(464)	(504)
Net cash provided by financing activities	<u>3,240</u>	<u>4,496</u>
Net decrease in cash	(5)	(3,408)
Cash and cash equivalents at beginning of period	3,327	10,694
Cash and cash equivalents at end of period	<u>\$ 3,322</u>	<u>\$ 7,286</u>
Supplemental disclosures of cash flow information:		
Interest paid	\$ 198	\$ 141
Income taxes paid	<u>\$ —</u>	<u>\$ —</u>
Supplemental disclosures of non-cash activities:		
Initial recognition of operating lease liabilities related to right-of-use assets	<u>\$ 5,995</u>	<u>\$ —</u>
Right-of-use assets obtained in exchange for new operating lease liabilities	<u>\$ 294</u>	<u>\$ —</u>
Changes in accrued capital expenditures	<u>\$ (541)</u>	<u>\$ (50)</u>

See accompanying notes to unaudited consolidated financial statements.

**ASPEN AEROGELS, INC.**  
**NOTES TO CONSOLIDATED FINANCIAL STATEMENTS**  
**(UNAUDITED)**

**(1) Description of Business and Basis of Presentation**

***Nature of Business***

Aspen Aerogels, Inc. (the Company) is an aerogel technology company that designs, develops and manufactures innovative, high-performance aerogel insulation used primarily in the energy infrastructure and building materials markets. The Company also conducts research and development related to aerogel technology supported by funding from several agencies of the U.S. government and other institutions in the form of research and development contracts.

The Company maintains its corporate offices in Northborough, Massachusetts. The Company has three wholly owned subsidiaries: Aspen Aerogels Rhode Island, LLC, Aspen Aerogels Germany, GmbH and Aspen Aerogels Georgia, LLC.

***Liquidity***

During the six months ended June 30, 2019, the Company incurred a net loss of \$11.3 million and used \$1.9 million of cash in operations. The Company had a cash and cash equivalents balance of \$3.3 million and outstanding borrowing under its revolving line of credit of \$2.9 million as of June 30, 2019 (see note 7). After giving effect to outstanding borrowings and letters of credit, the additional amount available to the Company at June 30, 2019 under the revolving line of credit was \$6.4 million. The existing revolving line of credit matures on April 28, 2020.

The Company is making investments to increase capacity at its existing manufacturing facility in East Providence, Rhode Island and to develop new technologies and business opportunities. The Company expects its existing cash balance and the amount anticipated to be available under the existing revolving line of credit will be sufficient to fund a portion of these investments. The Company plans to manage other capital expenditures and working capital balances to maintain the cash resources required to support current operating requirements and to complete the capacity expansion plan.

The Company will need to supplement its cash balance and amounts available under its revolving line of credit with anticipated cash flows from operations, debt financings, customer prepayments, technology licensing agreements or equity financings to provide the capital required to complete the expansion of the existing manufacturing facility and to fund its strategic business initiatives.

***Unaudited Interim Financial Information***

The accompanying unaudited interim consolidated financial statements include the accounts of the Company and have been prepared in accordance with accounting principles generally accepted in the United States of America (U.S. GAAP) and with the instructions to Form 10-Q and Article 10 of Regulation S-X. Certain information and disclosures normally included in the consolidated financial statements prepared in accordance with U.S. GAAP have been condensed or omitted pursuant to such rules and regulations. As such, the information included in this Quarterly Report on Form 10-Q should be read in conjunction with the audited consolidated financial statements and accompanying notes in our Annual Report on Form 10-K for the year ended December 31, 2018 (the Annual Report), filed with the Securities and Exchange Commission on March 8, 2019.

In the opinion of the Company's management, the unaudited interim consolidated financial statements have been prepared on the same basis as the audited consolidated financial statements and include all adjustments that are of a normal recurring nature and necessary for the fair statement of the Company's financial position as of June 30, 2019 and the results of its operations and stockholders' equity for the six months ended June 30, 2019 and 2018 and the cash flows for the six month periods then ended. The Company has evaluated events through the date of this filing.

The results of operations for the three and six months ended June 30, 2019 are not necessarily indicative of the results to be expected for the year ending December 31, 2019 or any other period.

## **(2) Significant Accounting Policies**

### ***Principles of Consolidation***

The accompanying consolidated financial statements, which have been prepared in accordance with U.S. GAAP, include the accounts of the Company and its wholly owned subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

### ***Use of Estimates***

The preparation of the consolidated financial statements requires the Company to make a number of estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates and assumptions include allowances for doubtful accounts, sales returns and allowances, product warranty costs, inventory valuation, the carrying amount of property and equipment, stock-based compensation and deferred income taxes. The Company evaluates its estimates and assumptions on an on-going basis using historical experience and other factors, including the current economic environment, which are believed to be reasonable under the circumstances. Management adjusts such estimates and assumptions when facts and circumstances warrant. Illiquid credit markets, volatile equity markets and declines in business investment can increase the uncertainty inherent in such estimates and assumptions. As future events and their effects cannot be determined with precision, actual results could differ significantly from these estimates. Changes in these estimates resulting from continuing changes in the economic environment will be reflected in the financial statements in future periods.

### ***Cash and Cash Equivalents***

Cash equivalents include short-term, highly liquid instruments, which consist of money market accounts. All cash and cash equivalents are maintained with major financial institutions in North America. Deposits with these financial institutions may exceed the amount of insurance provided on such deposits; however, these deposits typically may be redeemed upon demand and, therefore, bear minimal risk.

### ***Revenue Recognition***

On January 1, 2018, the Company adopted Accounting Standards Codification 606, Revenue from Contracts with Customers (ASC 606). See note 3 for further details.

### ***Leases***

On January 1, 2019, the Company adopted Accounting Standards Update (ASU) 2016-02, Leases (Topic 842). See note 8 for further details.

### ***Stock-based Compensation***

Stock-based compensation expense is measured at the grant date based on the fair value of the award. Expense is recognized on a straight-line basis over the requisite service period for all awards with service conditions. For performance-based awards, the grant date fair value is recognized as expense when the condition is probable of being achieved and then on a graded basis over the requisite service period. The Company uses the Black-Scholes option-pricing model to determine the fair value of service-based option awards, which requires a number of complex and subjective assumptions including fair value of the underlying security, the expected volatility of the underlying security, a risk-free interest rate and the expected term of the option. The fair value of restricted stock and restricted stock unit grants is determined using the closing trading price of the Company's common stock on the date of grant. The fair value of awards containing market conditions is determined using a Monte Carlo simulation model based upon the nature of the conditions, the expected volatility of the underlying security, and other relevant factors.

During the six months ended June 30, 2019, the Company granted 50,328 shares of restricted common stock with a grant date fair value of \$0.3 million and non-qualified options (NSOs) to purchase 71,700 shares of common stock with a grant date fair value of \$0.2 million vesting over a period of one year to its non-employee directors under the 2014 Employee, Director, and Consultant Equity Incentive Plan (the 2014 Equity Plan). During the six months ended June 30, 2019, the Company also granted 654,582 restricted common stock units (RSUs) with a grant date fair value of \$2.4 million and NSOs to purchase 632,183 shares of common stock with a grant date fair value of \$1.1 million to employees under the 2014 Equity Plan. The RSUs and NSOs granted to employees will vest over a three year period.

Stock-based compensation is included in cost of revenue or operating expenses, as applicable, and consists of the following:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
	(In thousands)			
Cost of product revenue	\$ 123	\$ 162	\$ 240	\$ 316
Research and development expenses	130	120	244	231
Sales and marketing expenses	164	209	293	441
General and administrative expenses	579	659	1,097	1,298
Total stock-based compensation	<u>\$ 996</u>	<u>\$ 1,150</u>	<u>\$ 1,874</u>	<u>\$ 2,286</u>

Pursuant to the “evergreen” provisions of the 2014 Equity Plan, the number of shares of common stock authorized for issuance under the plan automatically increased by 479,470 shares to 7,488,930 shares effective January 1, 2019.

As of June 30, 2019, 4,697,434 shares of common stock were reserved for issuance upon the exercise or vesting of outstanding stock-based awards granted under the 2014 Equity Plan. In addition, as of June 30, 2019, 87,235 shares of common stock were reserved for issuance upon the exercise of outstanding stock options granted under the Company’s 2001 Equity Incentive Plan, as amended (the 2001 Equity Plan). Any cancellations or forfeitures of the options outstanding under the 2001 Equity Plan will result in the shares reserved for issuance upon exercise of such options becoming available for grant under the 2014 Equity Plan. As of June 30, 2019, the Company has either issued or reserved in connection with statutory tax withholdings a total of 1,782,795 shares under the 2014 Equity Plan. As of June 30, 2019, there were 921,466 shares of common stock available for future grant under the 2014 Equity Plan.

### *Net Loss per Share*

The Company calculates net loss per common share based on the weighted-average number of common shares outstanding during each period. Potential common stock equivalents are determined using the treasury stock method. The weighted-average number of common shares included in the computation of diluted net loss gives effect to all potentially dilutive common equivalent shares, including outstanding stock options, and RSUs. Common equivalent shares are excluded from the computation of diluted net loss per share if their effect is antidilutive.

### *Segments*

Operating segments are identified as components of an enterprise about which separate, discrete financial information is available for evaluation by the chief operating decision maker in making decisions on how to allocate resources and assess performance. The Company’s chief operating decision maker is the Chief Executive Officer. The Company’s chief operating decision maker reviews consolidated operating results to make decisions about allocating resources and assessing performance for the entire Company. The Company views its operations and manages its business as one operating segment.

Information about the Company’s total revenues, based on shipment destination or services location, is presented in the following table:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
	(In thousands)			
Revenue:				
U.S.	\$ 14,972	\$ 9,310	\$ 26,224	\$ 19,192
International	14,561	12,361	31,221	25,553
Total	<u>\$ 29,533</u>	<u>\$ 21,671</u>	<u>\$ 57,445</u>	<u>\$ 44,745</u>

### *Warranty*

The Company provides warranties for its products and records the estimated cost within cost of revenue in the period that the related revenue is recorded. The Company’s standard warranty period extends to one year from the date of shipment. This standard warranty provides that the Company’s products will be free from defects in material and workmanship, and will, under normal use, conform to the specifications for the product.

The Company's products may be utilized in systems that involve new technical demands and new configurations. Accordingly, the Company regularly reviews and assesses whether warranty reserves should be recorded in the period the related revenue is recorded. For an initial shipment of product for use in a system with new technical demands or new configurations and where the Company is unsure of meeting the customer's specifications, the Company will defer the recognition of product revenue and related costs until written customer acceptance is obtained.

The Company performs periodic testing of its aerogel blankets to ensure compliance with published performance specifications. From time to time, tests may indicate a product could potentially perform outside of these specifications. At that time, additional testing is initiated or the Company may conduct a root cause investigation. During the year ended December 31, 2018, test results indicated that tested samples performed outside the published performance specifications for a specific attribute of a product. The Company has completed its assessment of the impact of the testing results on its customer base and, based on that completed assessment, has determined that it is remote that the Company has incurred a liability as of June 30, 2019.

The Company did not record any warranty expense during the six months ended June 30, 2019 and 2018. As of June 30, 2019, the Company had satisfied all warranty claims.

### ***Recently Issued Accounting Standards***

From time to time, new accounting pronouncements are issued by the Financial Accounting Standards Board (FASB) or other standard setting bodies. Recently issued standards typically do not require adoption until a future effective date. Prior to their effective date, the Company evaluates the pronouncements to determine the potential effects of adoption to its consolidated financial statements.

### ***Standards Implemented Since December 31, 2018***

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842). FASB ASU 2016-02 modifies the accounting for leases and requires that all leases be recorded on the consolidated balance sheets as assets and liabilities. This standard is effective for fiscal years beginning after December 15, 2018. The Company adopted this standard on January 1, 2019 using the modified retrospective transition approach with the effective date as the date of initial application. As a result, the Company did not update financial information or provide the disclosures otherwise required under the new standard for dates and periods before January 1, 2019. To measure its lease liabilities, the Company used its incremental borrowing rate as of the date of adoption or the rate implicit in the lease, if available. The discount rate was applied to the remaining lease term and remaining payments at the date of adoption. The Company also elected the package of practical expedients under the new standard, which permits the Company to not reassess prior conclusions about lease identification, lease classification, and initial direct costs. The most significant effects of this new standard on the consolidated financial statements relate to the recognition of new right-of-use (ROU) assets and lease liabilities on the consolidated balance sheets and the provision of significant new disclosures about leasing activities. Upon adoption on January 1, 2019, the Company recognized operating lease liabilities of approximately \$6.0 million with corresponding ROU assets of approximately \$4.6 million. Additionally, the Company derecognized deferred rent liabilities of \$1.4 million. This standard has not materially impacted the Company's consolidated net loss or net cash used in operations. The Company also elected the short-term lease recognition exemption for all leases that qualify. For leases that qualify for this exemption, the Company does not recognize ROU assets or lease liabilities. In addition, the Company elected the practical expedient to not separate non-lease components from the associated lease components for all of its equipment leases.

### ***Standards to be Implemented***

The Company believes that the impact of recently issued accounting standards that are not yet effective will not have a material impact on its consolidated financial statements.

### **(3) Revenue from Contracts with Customers**

On January 1, 2018, the Company Adopted Accounting Standards Codification 606, Revenue from Contracts with Customers (ASC 606) using the modified retrospective method for all contracts not completed as of the date of adoption. The adoption of ASC 606 did not have a material impact on the allocation and timing of the recognition of previously reported revenues from the sale of products, subsea projects or the performance of research services. In addition, the Company determined that there are no incremental contract costs or contract fulfillment costs associated with the adoption of ASC 606. The adoption of ASC 606 represents a change in accounting principle that more closely aligns revenue recognition with the delivery of the Company's product or performance of research services and will provide financial statement readers with enhanced disclosures.

### ***Revenue Recognition***

Revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration which the entity expects to receive in exchange for those goods or services. To determine revenue recognition for arrangements within the scope of ASC 606, the Company performs the following five steps: (i) identification of the contract with a customer; (ii) identification of the performance obligations in the contract; (iii) determination of the transaction price; (iv) allocation of the transaction price to the separate performance obligations in the contract; and (v) recognition of the revenue associated with performance obligations as they are satisfied. The Company applies the five-step model to contracts when it is probable that the Company will collect the consideration it is entitled to in exchange for the goods or services it transfers to the customer. At contract inception, once the contract is determined to be within the scope of ASC 606, the Company assesses the goods or services promised within each contract and determines those that are performance obligations, and assesses whether each promised good or service is distinct. If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price based on the estimated relative standalone selling prices of the promised products or services underlying each performance obligation. The Company determines standalone selling prices based on the price at which the performance obligation is sold separately. If the standalone selling price is not observable through past transactions, the Company estimates the standalone selling price taking into account available information such as market conditions and internally approved pricing guidelines related to the performance obligations. The Company then recognizes as revenue the amount of the transaction price that is allocated to the respective performance obligation when (or as) the performance obligation is satisfied.

When determining the transaction price of a contract, an adjustment is made if payment from a customer occurs either significantly before or significantly after performance, resulting in a significant financing component. Applying the practical expedient in paragraph ASC 606-10-32-18, the Company does not assess whether a significant financing component exists if the period between when the Company performs its obligations under the contract and when the customer pays is one year or less. The Company did not have any contracts outstanding at December 31, 2018 and did not enter into any contracts during the six months ended June 30, 2019 that contained a significant financing component.

The Company records deferred revenue for product sales when (i) the Company has delivered products but other revenue recognition criteria have not been satisfied or (ii) payments have been received in advance of the completion of required performance obligations.

### ***Shipping and Handling Costs***

Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as fulfillment costs and are included in the cost of product revenue. The amount of revenue recognized reflects the consideration to which the Company expects to be entitled to receive in exchange for these products or research services.

### ***Product Revenue***

The Company generally enters into contracts containing one type of performance obligation. The Company recognizes product revenue when the performance obligation is satisfied, which is generally upon delivery according to contractual shipping terms within customer purchase orders.

The Company also enters into rebate agreements with certain customers. These agreements may be considered an additional performance obligation of the Company or variable consideration within a contract. Rebates are recorded as a reduction of revenue in the period the related product revenue is recognized. A corresponding liability is recorded as a component of deferred revenue on the consolidated balance sheets. These arrangements are primarily based on the customer attaining contractually specified sales volumes.

The Company estimates the amount of its product sales that may be returned by its customers and records this estimate as a reduction of revenue in the period the related product revenue is recognized. The Company currently estimates product return liabilities using historical rates of return, current quarter credit sales, and specific items of exposure on a contract by contract basis. Sales return reserves were approximately \$0.1 million at both June 30, 2019 and December 31, 2018.

### ***Subsea Projects***

The Company manufactures and sells subsea products that are designed for pipe-in-pipe applications in offshore oil production and are typically customized to meet customer specifications. Subsea products typically have no alternative use and contain an enforceable right to payment. Customer invoicing terms for subsea products are typically based on certain milestones within the production and delivery schedule. Under the provisions of ASC 606, the Company recognizes revenue at a point in time when transfer

of control of the products is passed to the customer, or over time utilizing the input/cost-to-cost method. The timing of revenue recognition is assessed on a contract by contract basis. During the six months ended June 30, 2019 and 2018, the Company recognized revenue of \$12.5 million and \$0.8 million, respectively, in connection with subsea projects.

### Research Services

The Company performs research services under contracts with various government agencies and other institutions. These contracts generally have one type of performance obligation associated with the provision of research services including functional licenses to any resulting intellectual property. The Company records revenue using the percentage-of-completion method in two ways: (1) for firm-fixed-price contracts, the Company accrues that portion of the total contract price that is allocable on the basis of the Company's estimates of costs incurred to date to total contract costs; and (2) for cost-plus-fixed-fee contracts, the Company records revenue that is equal to total payroll cost incurred times a stated factor plus reimbursable expenses, to a stated upper limit. The primary cost under the Company's research service contracts is the labor effort expended in completing the research, and typically the only deliverable, other than the labor hours expended, is the reporting of research results to the customer. Because the input measure of labor hours expended is also reflective of the output measure, it is a reliable means to measure the extent of progress toward completion. Revisions in cost estimates and fees during the course of the contract are reflected in the accounting period in which the facts that require the revisions become known. Contract costs and rates used to allocate overhead to contracts are subject to audit by the respective contracting government agency. Adjustments to revenue as a result of audit are recorded within the period they become known. To date, adjustments to revenue as a result of contracting agency audits have been insignificant.

### Disaggregation of Revenue

In the following tables, revenue is disaggregated by primary geographical region and source of revenue:

	Three Months Ended June 30,					
	2019			2018		
	U.S.	International	Total	U.S.	International	Total
	(In thousands)					
<b>Geographical region</b>						
Asia	\$ —	\$ 7,786	\$ 7,786	\$ —	\$ 7,673	\$ 7,673
Canada	—	9	9	—	596	596
Europe	—	5,864	5,864	—	3,411	3,411
Latin America	—	902	902	—	681	681
U.S.	14,972	—	14,972	9,310	—	9,310
Total revenue	\$ 14,972	\$ 14,561	\$ 29,533	\$ 9,310	\$ 12,361	\$ 21,671
<b>Source of revenue</b>						
Product revenue	\$ 10,790	\$ 10,334	\$ 21,124	\$ 8,754	\$ 12,361	\$ 21,115
Subsea projects	3,557	4,227	7,784	—	—	—
Research services	625	—	625	556	—	556
Total revenue	\$ 14,972	\$ 14,561	\$ 29,533	\$ 9,310	\$ 12,361	\$ 21,671

	Six Months Ended June 30,					
	2019			2018		
	U.S.	International	Total	U.S.	International	Total
(In thousands)						
Geographical region						
Asia	\$ —	\$ 14,509	\$ 14,509	\$ —	\$ 15,901	\$ 15,901
Canada	—	1,906	1,906	—	2,271	2,271
Europe	—	12,987	12,987	—	5,866	5,866
Latin America	—	1,819	1,819	—	1,515	1,515
U.S.	26,224	—	26,224	19,192	—	19,192
Total revenue	\$ 26,224	\$ 31,221	\$ 57,445	\$ 19,192	\$ 25,553	\$ 44,745
Source of revenue						
Product revenue	\$ 20,915	\$ 22,299	\$ 43,214	\$ 18,078	\$ 24,714	\$ 42,792
Subsea projects	3,557	8,922	12,479	5	839	844
Research services	1,752	—	1,752	1,109	—	1,109
Total revenue	\$ 26,224	\$ 31,221	\$ 57,445	\$ 19,192	\$ 25,553	\$ 44,745

### Contract Balances

The following table presents changes in the Company's contract assets and contract liabilities during the six months ended June 30, 2019:

	Balance at			Balance at
	December 31, 2018	Additions	Deductions	
(In thousands)				
Contract assets				
Subsea projects	\$ 2,742	\$ 17,923	\$ (15,062)	\$ 5,603
Research services	369	1,482	(904)	947
Total contract assets	\$ 3,111	\$ 19,405	\$ (15,966)	\$ 6,550
Contract liabilities				
Deferred revenue				
Product revenue	\$ 1,751	\$ 8,356	\$ (1,764)	\$ 8,343
Subsea projects	781	6,379	(6,910)	250
Research services	97	212	(45)	264
Prepayment liability	4,485	5,353	(54)	9,784
Total contract liabilities	\$ 7,114	\$ 20,300	\$ (8,773)	\$ 18,641

During the six months ended June 30, 2019, the Company recognized \$1.4 million of revenue that was included in deferred revenue at the beginning of the period.

A contract asset is recorded when the Company satisfies a performance obligation by transferring a promised good or service and has earned the right to consideration from its customer. These assets may represent a conditional or unconditional right to consideration and are included within accounts receivable on the consolidated balance sheets.

A contract liability is recorded when consideration is received, or such consideration is unconditionally due, from a customer prior to transferring goods or services under the terms of the contract. Contract liabilities are recognized as revenue after control of the products or services is transferred to the customer and all revenue recognition criteria have been met.

#### (4) Inventories

Inventories consist of the following:

	June 30, 2019	December 31, 2018
	(In thousands)	
Raw materials	\$ 4,488	\$ 3,159
Finished goods	8,611	4,159
Total	<u>\$ 13,099</u>	<u>\$ 7,318</u>

#### (5) Property, Plant and Equipment, Net

Property, plant and equipment consist of the following:

	June 30, 2019	December 31, 2018	Useful life
	(In thousands)		
Construction in progress	\$ 150	\$ 1,568	—
Buildings	24,016	24,016	30 years
Machinery and equipment	122,286	120,466	3-10 years
Computer equipment and software	8,540	8,352	3 years
Total	<u>154,992</u>	<u>154,402</u>	
Accumulated depreciation	(97,673)	(92,703)	
Property, plant and equipment, net	<u>\$ 57,319</u>	<u>\$ 61,699</u>	

Depreciation expense was \$5.1 million and \$5.7 million for the six months ended June 30, 2019 and 2018, respectively.

Construction in progress included less than \$0.1 million and \$1.2 million at June 30, 2019 and December 31, 2018, respectively, related to projects associated with the Company's plan to expand the capacity of the East Providence, Rhode Island facility.

#### (6) Accrued Expenses

Accrued expenses consist of the following:

	June 30, 2019	December 31, 2018
	(In thousands)	
Employee compensation	\$ 2,848	\$ 2,750
Other accrued expenses	1,197	1,114
Total	<u>\$ 4,045</u>	<u>\$ 3,864</u>

#### (7) Commitments and Contingencies

##### *Customer Supply Agreement*

The Company is party to a supply agreement, as amended, with BASF Polyurethanes GmbH (BASF) (the Supply Agreement) and a joint development agreement with BASF SE (the JDA). Pursuant to the Supply Agreement, the Company will sell exclusively to BASF certain of the Company's products at annual volumes to be specified by BASF, subject to certain volume limits. However, BASF has no obligation to purchase products under the Supply Agreement. The Supply Agreement will terminate on December 31, 2027 with respect to the Company's Spaceloft A2 product and December 31, 2028 with respect to a new product developed under the JDA. Upon the expiration of the Supply Agreement with respect to each product, the Company will be subject to a post-termination supply commitment for an additional two years. The JDA is designed to facilitate collaboration by the parties on the development and commercialization of new products.

In addition, BASF, in its sole discretion, may make prepayments to the Company in the aggregate amount of up to \$22.0 million during the term of the Supply Agreement. These prepayment obligations are secured by a security interest in real estate, plant and equipment at the Company's Rhode Island facility and a license to certain intellectual property. BASF made a prepayment in the amount of \$5.0 million to the Company in 2018 (the 2018 Prepayment). Beginning January 1, 2019, BASF may require that the

Company credit up to 25.3% of any amounts invoiced by the Company for the Spaceloft A2 product sold to BASF against the 2018 Prepayment balance. If any of the 2018 Prepayment remains uncredited as of December 31, 2021, BASF may require that the Company repay the uncredited amount to BASF.

Pursuant to the first addendum to the Supply Agreement, on January 30, 2019, BASF made an additional prepayment in the amount of \$5.0 million to the Company (the 2019 Prepayment). After January 1, 2020, the Company will credit 50.0% of any amounts that it invoices for the newly developed product sold to BASF against the outstanding balance of the 2019 Prepayment. After December 31, 2022, BASF may require that the Company credit an additional 24.7% of any amounts invoiced by the Company for Spaceloft A2 product sold to BASF against the outstanding balance of the 2019 Prepayment, if any, or require that the Company repay the uncredited amount of the 2019 Prepayment to BASF in full.

As of June 30, 2019, the Company had received \$10.0 million in prepayments from BASF and applied less than \$0.1 million of credits against amounts invoiced. The prepayments are recorded on the balance sheet as a prepayment liability, net of the current portion of \$0.2 million which is included within deferred revenue. The amounts and terms of additional prepayment installments, if any, are subject to negotiation between the Company and BASF.

### ***Revolving Line of Credit***

The Company is party to an Amended and Restated Loan and Security Agreement with Silicon Valley Bank (the Loan Agreement). On March 4, 2019, the Loan Agreement was amended to extend the maturity date of the revolving credit facility to April 28, 2020.

Under the revolving credit facility the Company is permitted to borrow a maximum of \$20.0 million, subject to continued covenant compliance and borrowing base requirements. At the Company's election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In addition, the Company is required to pay a monthly unused revolving line facility fee of 0.5% per annum of the average unused portion of the revolving credit facility.

Under the Loan Agreement, the Company is required to comply with both non-financial and financial covenants, including a minimum EBITDA covenant, as defined. At June 30, 2019, the Company was in compliance with all such covenants. Obligations under the Loan Agreement are secured by a security interest in all assets of the Company, including those at the East Providence facility, except for certain exclusions. The Company intends to extend or replace the facility prior to its maturity.

At June 30, 2019 and December 31, 2018, the Company had \$2.9 million and \$4.2 million, respectively, drawn on the revolving credit facility. The Company has been required to provide letters of credit to secure obligations under certain commercial contracts and other obligations. The Company had outstanding letters of credit backed by the revolving credit facility of \$0.6 million and \$1.6 million at June 30, 2019 and December 31, 2018, respectively, which reduce the funds otherwise available to the Company under the facility.

At June 30, 2019, the effective amount available to the Company under the revolving credit facility was \$6.4 million after giving effect to the \$2.9 million in outstanding borrowings and \$0.6 million of outstanding letters of credit.

### ***Litigation***

The Company is, from time to time, a party to litigation that arises in the normal course of its business operations. See Part II, Item 1 "Legal Proceedings" of this Quarterly Report on Form 10-Q for a description of certain of the Company's current legal proceedings. The Company is not presently a party to any litigation for which it believes a loss is probable requiring an amount to be accrued or a possible loss contingency requiring disclosure.

### **(8) Leases**

The Company leases office and warehouse space in Northborough, Massachusetts and East Providence, Rhode Island under operating leases. The Company also leases equipment under operating leases. The Company's operating leases expire at various dates through 2026. Under these agreements, the Company is obligated to pay annual rent, real estate taxes, and certain other operating expenses.

On January 1, 2019, the Company adopted ASU 2016-02 which modifies the accounting for leases and requires that all leases be recorded on the consolidated balance sheets as assets and liabilities. The Company adopted this standard using the modified

retrospective transition approach with the effective date as the date of initial application. As a result, the Company did not update financial information or provide the disclosures otherwise required under the new standard for dates and periods before January 1, 2019. The Company also elected the package of practical expedients under the new standard, which permits the Company to not reassess prior conclusions about lease identification, lease classification, and initial direct costs. In addition, the Company elected the short-term lease recognition exemption under which the Company will not recognize ROU assets or lease liabilities for all leases that qualify. The Company also elected the practical expedient to not separate non-lease components from the associated lease components for all of its equipment leases.

The Company determines if an arrangement is a lease at inception. ROU assets represent the Company's right to use an underlying asset for the lease term and lease liabilities represent the Company's payment obligations under the lease. Operating lease ROU assets and liabilities are recognized based on the present value of lease payments over the lease term. To measure its lease liabilities, the Company uses its incremental borrowing rate or the rate implicit in the lease, if available. ROU assets also include any direct costs and prepaid lease payments but exclude any lease incentives received. The Company's lease terms may include options to extend or terminate the lease when it is reasonably certain that the Company will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

The Company elected the short-term lease recognition exemption for all leases that qualify. For leases that qualify for this exemption, the Company will not recognize ROU assets or lease liabilities. For lease agreements with lease and non-lease components, the Company will account for each component separately. However, in the case of equipment leases, the Company will account for lease and non-lease components as a single component.

Prior to the Company's adoption of ASU 2016-02, the Company recorded the difference between rent expense recognized on a straight-line basis and the contractual payments as deferred rent. Deferred rent consisted of the following at December 31, 2018:

	<b>December 31, 2018</b>
Deferred rent	\$ 1,368
Current maturities of deferred rent	(150)
Deferred rent, less current maturities	<u>\$ 1,218</u>

Upon adoption of ASU 2016-02 on January 1, 2019, the Company recognized operating lease liabilities of approximately \$6.0 million with corresponding ROU assets of approximately \$4.6 million. Additionally, the Company derecognized deferred rent liabilities of \$1.4 million. Maturities of operating lease liabilities at June 30, 2019 are as follows:

<b>Year</b>	<b>Operating Leases (In thousands)</b>
2019 (excluding the six months ended June 30, 2019)	\$ 757
2020	1,396
2021	1,204
2022	1,122
2023	1,093
Thereafter	1,700
Total lease payments	<u>7,272</u>
Less imputed interest	(1,453)
Total lease liabilities	<u>\$ 5,819</u>

The Company incurred operating lease costs of \$0.7 million during the six months ended June 30, 2019. Cash payments related to operating lease liabilities were \$0.7 million during the six months ended June 30, 2019. At June 30, 2019, the weighted average remaining lease term for operating leases was 5.8 years. At June 30, 2019, the weighted average discount rate for operating leases was 7.8%.

As of June 30, 2019, the Company has additional operating equipment leases with total lease payments of \$0.1 million that have not commenced. These operating leases will commence during fiscal year 2019 and have lease terms of four years.

## (9) Net Loss Per Share

The computation of basic and diluted net loss per share consists of the following:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
(In thousands, except share and per share data)				
Numerator:				
Net loss	\$ (5,318)	\$ (6,958)	\$ (11,320)	\$ (13,800)
Denominator:				
Weighted average shares outstanding, basic and diluted	24,118,620	23,743,358	24,025,136	23,655,676
Net loss per share, basic and diluted	\$ (0.22)	\$ (0.29)	\$ (0.47)	\$ (0.58)

Potentially dilutive common shares that were excluded from the computation of diluted net loss per share because they were anti-dilutive consist of the following:

	Three Months Ended June 30,		Six Months Ended June 30,	
	2019	2018	2019	2018
Common stock options	3,679,254	3,007,162	3,679,254	3,007,162
Restricted common stock units	1,105,415	949,683	1,105,415	949,683
Restricted common stock awards	128,453	136,187	128,453	136,187
Total	4,913,122	4,093,032	4,913,122	4,093,032

In the table above, anti-dilutive shares consist of those common stock equivalents that have (i) an exercise price above the average stock price for the period or (ii) related average unrecognized stock compensation expense sufficient to buy back the entire amount of shares. The Company excludes the shares issued in connection with restricted stock awards from the calculation of basic weighted average common shares outstanding until the restrictions lapse.

## (10) Income Taxes

The Company incurred net operating losses and recorded a full valuation allowance against net deferred assets for all periods presented. Accordingly, the Company has not recorded a provision for federal or state income taxes.

## (11) Subsequent Events

The Company has evaluated subsequent events through August 1, 2019, the date of issuance of the consolidated financial statements for the three and six months ended June 30, 2019.

## **Item 2. Management's Discussion and Analysis of Financial Condition and Results of Operations.**

*The following information should be read in conjunction with the unaudited financial information and the notes thereto included in this Quarterly Report on Form 10-Q and the audited financial information and the notes thereto included in the Annual Report on Form 10-K for the year ended December 31, 2018, filed with the Securities and Exchange Commission (SEC) on March 8, 2019, which we refer to as the Annual Report.*

*Certain matters discussed in this Quarterly Report on Form 10-Q may be deemed to be forward-looking statements that involve risks and uncertainties. We make such forward-looking statements pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995 and other federal securities laws. In this Quarterly Report on Form 10-Q, words such as "may," "will," "anticipate," "estimate," "expects," "projects," "intends," "plans," "believes" and similar expressions (as well as other words or expressions referencing future events, conditions or circumstances) are intended to identify forward-looking statements.*

*Our actual results and the timing of certain events may differ materially from the results discussed, projected, anticipated, or indicated in any forward-looking statements. We caution you that forward-looking statements are not guarantees of future performance and that our actual results of operations, financial condition and liquidity, and the development of the industry in which we operate may differ materially from the forward-looking statements contained in this Quarterly Report on Form 10-Q. In addition, even if our results of operations, financial condition and liquidity, and the development of the industry in which we operate are consistent with the forward-looking statements contained in this Quarterly Report on Form 10-Q, they may not be predictive of results or developments in future periods.*

*The following information and any forward-looking statements should be considered in light of factors discussed elsewhere in this Quarterly Report on Form 10-Q and under "Risk Factors" in Item 1A of the Annual Report.*

*We caution readers not to place undue reliance on any forward-looking statements made by us, which speak only as of the date they are made. We disclaim any obligation, except as specifically required by law and the rules of the SEC, to publicly update or revise any such statements to reflect any change in our expectations or in events, conditions or circumstances on which any such statements may be based, or that may affect the likelihood that actual results will differ from those set forth in the forward-looking statements.*

*You should read the following discussion and analysis of financial condition and results of operations together with Part I Item 1 "Financial Statements," which includes our financial statements and related notes, elsewhere in this Quarterly Report on Form 10-Q.*

### **Overview**

We design, develop and manufacture innovative, high-performance aerogel insulation used primarily in the energy infrastructure and building materials markets. We believe our aerogel blankets deliver the best thermal performance of any widely used insulation product available on the market today and provide a combination of performance attributes unmatched by traditional insulation materials. Our end-use customers select our products where thermal performance is critical and to save money, improve resource efficiency, enhance sustainability, preserve operating assets and protect workers.

Our insulation is used by oil producers and the owners and operators of refineries, petrochemical plants, liquefied natural gas facilities, power generating assets and other energy infrastructure. Our Pyrogel and Cryogel product lines have undergone rigorous technical validation by industry leading end-users and achieved significant market adoption. We also derive product revenue from the building materials and other end markets. Customers in these markets use our products for applications as diverse as wall systems, military and commercial aircraft, trains, buses, appliances, apparel, footwear and outdoor gear.

We generate product revenue through the sale of our line of aerogel blankets. We market and sell our products primarily through a sales force based in North America, Europe and Asia. The efforts of our sales force are supported by a small number of sales consultants with extensive knowledge of a particular market or region. Our sales force is responsible for establishing and maintaining customer and partner relationships, delivering highly technical information and ensuring high-quality customer service.

Our salespeople work directly with end-use customers and engineering firms to promote the qualification, specification and acceptance of our products. We also rely on an existing and well-established channel of qualified insulation distributors and contractors in more than 50 countries around the world to ensure rapid delivery of our products and strong end-user support. Our salespeople also work to educate insulation contractors about the technical and operating cost advantages of our aerogel blankets.

We also perform research services under contracts with various agencies of the U.S. government, including the Department of Defense and the Department of Energy, and other institutions. Research performed under contract with government agencies and other institutions enables us to develop and leverage technologies into broader commercial applications.

We manufacture our products using our proprietary technology at our facility in East Providence, Rhode Island. We have operated the East Providence facility since 2008. During 2018, we initiated a series of projects designed to increase the nameplate capacity of the East Providence facility by 20% to approximately 60 million square feet of aerogel blankets by the end of 2020. As of June 30, 2019, we had increased our annual capacity to approximately 55 million square feet of aerogel blankets.

We have entered into a strategic partnership with BASF to develop and commercialize products for the building materials and other markets. The strategic partnership includes a supply agreement governing the exclusive sale of specified products to BASF and a joint development agreement targeting innovative products and technologies. BASF has no obligation to purchase any products under the supply agreement. Pursuant to the supply agreement, BASF may, in its sole discretion, make prepayments to us in the aggregate amount of up to \$22.0 million during the term of the agreement. The prepayments may be repaid by us to BASF at any time in whole or in part for any reason.

BASF made a prepayment to us of \$5.0 million during 2018. Beginning January 1, 2019, 25.3% of any amounts that we invoice for Spaceloft A2 sold to BASF will be credited against the outstanding balance of the 2018 prepayment. If any amount of the 2018 prepayment remains uncredited at December 31, 2021, BASF may require that we repay the uncredited amount to BASF. In January 2019, BASF made an additional prepayment to us of \$5.0 million. After January 1, 2020, 50% of any amounts that we invoice for a newly developed product sold to BASF will be credited against the outstanding balance of the 2019 prepayment. After December 31, 2022, BASF may require that we credit 24.7% of any amounts we invoice for Spaceloft A2 sold to BASF against the outstanding balance of the 2019 prepayment or require that we repay the uncredited amount to BASF.

On March 4, 2019, our revolving credit facility with Silicon Valley Bank was amended to extend the maturity date of the facility to April 28, 2020. The amendment to the credit facility also (i) revised the definition of “Borrowing Base” to remove the eligible inventory component of the Borrowing Base, (ii) removed the Adjusted Quick Ratio financial covenant set forth in the loan agreement and (iii) established certain minimum EBITDA levels with respect to the minimum EBITDA financial covenant for the extended term. Under our revolving credit facility, we are permitted to borrow a maximum of \$20.0 million, subject to continued covenant compliance and borrowing base requirements. At our election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In addition, we are required to pay a monthly unused revolving line facility fee of 0.5% per annum of the average unused portion of the revolving credit facility. We intend to extend or replace the facility prior to its maturity.

Our revenue for the six months ended June 30, 2019 was \$57.4 million, which represented an increase of \$12.7 million from the six months ended June 30, 2018. Net loss for the six months ended June 30, 2019 was \$11.3 million and net loss per share was \$0.47. Net loss for the six months ended June 30, 2018 was \$13.8 million and net loss per share was \$0.58.

### Key Metrics and Non-GAAP Financial Measures

We regularly review a number of metrics, including the following key metrics, to evaluate our business, measure our performance, identify trends affecting our business, formulate financial projections and make strategic decisions.

#### *Square Foot Operating Metric*

We price our product and measure our product shipments in square feet. We estimate our annual nameplate capacity was approximately 55 million square feet of aerogel blankets at June 30, 2019. We believe the square foot operating metric allows us and our investors to measure our manufacturing capacity and product shipments on a uniform and consistent basis. The following chart sets forth product shipments in square feet associated with recognized revenue, including revenue recognized over time utilizing the input/cost-to-cost method, for the periods presented:

	Three Months Ended		Six Months Ended	
	June 30,		June 30,	
	2019	2018	2019	2018
	(In thousands)			
Product shipments in square feet	8,421	7,152	17,106	14,894

### *Adjusted EBITDA*

We use Adjusted EBITDA, a non-GAAP financial measure, as a means to assess our operating performance. We define Adjusted EBITDA as net income (loss) before interest expense, taxes, depreciation, amortization, stock-based compensation expense and other items, from time to time, which we do not believe are indicative of our core operating performance. Adjusted EBITDA is a supplemental measure of our performance that is not presented in accordance with U.S. GAAP. Adjusted EBITDA should not be considered as an alternative to net income (loss) or any other measure of financial performance calculated and presented in accordance with U.S. GAAP. In addition, our definition and presentation of Adjusted EBITDA may not be comparable to similarly titled measures presented by other companies.

We use Adjusted EBITDA:

- as a measure of operating performance because it does not include the impact of items that we do not consider indicative of our core operating performance;
- for planning purposes, including the preparation of our annual operating budget,
- to allocate resources to enhance the financial performance of our business; and
- as a performance measure used under our bonus plan.

We also believe that the presentation of Adjusted EBITDA provides useful information to investors with respect to our results of operations and in assessing the performance and value of our business. Various measures of EBITDA are widely used by investors to measure a company's operating performance without regard to items that can vary substantially from company to company depending upon financing and accounting methods, book values of assets, capital structures and the methods by which assets were acquired.

Although measures similar to Adjusted EBITDA are frequently used by investors and securities analysts in their evaluation of companies, we understand that Adjusted EBITDA has limitations as an analytical tool, and you should not consider it in isolation or as a substitute for net income (loss), income (loss) from operations, net cash provided by (used in) operating activities or an analysis of our results of operations as reported under U.S. GAAP. Some of these limitations are:

- Adjusted EBITDA does not reflect our historical cash expenditures or future requirements for capital expenditures or other contractual commitments;
- Adjusted EBITDA does not reflect changes in, or cash requirements for, our working capital needs;
- Adjusted EBITDA does not reflect stock-based compensation expense;
- Adjusted EBITDA does not reflect our income tax expense or cash requirements to pay our income taxes;
- Adjusted EBITDA does not reflect our interest expense, or the cash requirements necessary to service interest or principal payments on our debt;
- although depreciation, amortization and impairment charges are non-cash charges, the assets being depreciated, amortized or impaired will often have to be replaced in the future, and Adjusted EBITDA does not reflect any cash requirements for these replacements; and
- other companies in our industry may calculate EBITDA or Adjusted EBITDA differently than we do, limiting their usefulness as a comparative measure.

Because of these limitations, our Adjusted EBITDA should not be considered as a measure of discretionary cash available to us to reinvest in the growth of our business or as a measure of cash available for us to meet our obligations.

To properly and prudently evaluate our business, we encourage you to review the U.S. GAAP financial statements included elsewhere in this Quarterly Report on Form 10-Q, and not to rely on any single financial measure to evaluate our business.

The following table presents a reconciliation of net loss, the most directly comparable U.S. GAAP measure, to Adjusted EBITDA for the periods presented:

	Three Months Ended		Six Months Ended	
	June 30,		June 30,	
	2019	2018	2019	2018
	(In thousands)			
Net loss	\$ (5,318)	\$ (6,958)	\$ (11,320)	\$ (13,800)
Depreciation and amortization	2,565	2,515	5,097	5,686
Stock-based compensation (1)	996	1,150	1,874	2,286
Interest expense	103	103	144	195
Adjusted EBITDA	\$ (1,654)	\$ (3,190)	\$ (4,205)	\$ (5,633)

(1) Represents non-cash stock-based compensation related to vesting and modifications of stock option grants, vesting of restricted stock units and vesting of restricted common stock.

Our financial performance, including such measures as net income (loss), earnings per share and Adjusted EBITDA, are affected by a number of factors including volume and mix of aerogel products sold, average selling prices, our material and manufacturing costs, the costs associated with capacity expansions and start-up of additional production capacity, and the amount and timing of operating expenses, including patent enforcement costs. Accordingly, we expect that our net income (loss), earnings per share and Adjusted EBITDA will vary from period to period.

During 2019, we are projecting growth in total revenue principally due to expected volume growth in our core petrochemical and refinery markets in the United States, and an anticipated increase in project-based demand, particularly in the subsea and LNG markets. We have also implemented a price increase for 2019 designed to support revenue growth and to offset an increase in raw material costs. As a result of these factors, we are projecting total revenue growth in excess of 20%, a decrease in net loss versus 2018, and a return to positive Adjusted EBITDA during 2019.

## Components of Our Results of Operations

### Revenue

We recognize product revenue from the sale of our line of aerogel products and research services revenue from the provision of services under contracts with various agencies of the U.S. government and other institutions. Product and research services revenue is recognized upon the satisfaction of contractual performance obligations.

We record deferred revenue for product sales when (i) we have delivered products but other revenue recognition criteria have not been satisfied or (ii) payments have been received in advance of the completion of required performance obligations.

### Cost of Revenue

Cost of product revenue consists primarily of materials and manufacturing expense. Cost of product revenue is recorded when the related product revenue is recognized.

Material is our most significant component of cost of product revenue and includes fibrous batting, silica materials and additives. Material costs as a percentage of product revenue vary from product to product due to differences in average selling prices, material requirements, product thicknesses and manufacturing yields. During the year ended December 31, 2018, we experienced a significant increase in the costs of certain silica precursor materials, which constitute over 50% of our raw material costs. In addition, we provide warranties for our products and record the estimated cost within cost of revenue in the period that the related revenue is recorded or when we become aware that a potential warranty claim is probable and can be reasonably estimated. As a result of these factors, material costs as a percentage of revenue will vary from period to period due to changes in the mix of aerogel products sold, the costs of our raw materials or the estimated cost of warranties. In 2019, we expect material costs to decline as a percentage of revenue as we seek to achieve higher selling prices, lower cost formulations, material sourcing improvements, and manufacturing yield enhancements for our aerogel products.

Manufacturing expense is also a significant component of cost of revenue. Manufacturing expense includes labor, utilities, maintenance expense, and depreciation on manufacturing assets. Manufacturing expense also includes stock-based compensation of manufacturing employees and shipping costs. We expect manufacturing expense will grow in absolute dollars during 2019, but at a rate lower than the expected growth in product revenue. As a result, we expect manufacturing expense as a percentage of revenue will decrease in 2019 versus 2018.

In total, we expect that cost of product revenue will increase in absolute dollars, but decrease as a percentage of product revenue during 2019 versus 2018. The projected increase in cost of product revenue in absolute dollars reflects the impact of a planned increase in manufacturing output to support expected revenue growth, offset, in part, by a projected increase in average selling prices and an expected favorable mix of products sold. In the longer term, we expect cost of product revenue will continue both to increase in absolute dollars and to decline as a percentage of revenue.

Cost of research services revenue consists of direct labor costs of research personnel engaged in the contract research, third-party consulting and subcontractor expense, and associated direct material costs. This cost of revenue also includes overhead expenses associated with project resources, development tools and supplies. Cost of research services revenue is recorded when the related research services revenue is recognized.

### ***Gross Profit***

Our gross profit as a percentage of revenue is affected by a number of factors, including the volume of aerogel products produced and sold, the mix of aerogel products sold, average selling prices, our material and manufacturing costs, realized capacity utilization and the costs associated with expansions and start-up of production capacity. Accordingly, we expect our gross profit in absolute dollars and as a percentage of revenue to vary significantly from period to period.

During 2019, we are projecting growth in revenue as a result of expected volume growth in our core petrochemical and refinery markets in the United States, and an anticipated increase in project-based demand, particularly in the subsea and LNG markets. In addition, we implemented a price increase for 2019 designed to offset recent increases in raw material costs and to improve gross profit margins. We also expect manufacturing expenses will grow during 2019 at a rate significantly lower than projected growth in product revenue due to the high proportion of fixed manufacturing expense in our manufacturing operations. As a result, we expect gross profit to improve both in absolute dollars and as a percentage of revenue during 2019.

In the longer term, we expect gross profit to continue to increase in absolute dollars and as a percentage of revenue due to expected increases in total revenue, production volumes and manufacturing productivity. In addition, we expect the increases in revenue, volume and productivity will be supported by the implementation of lower cost product formulations and realization of material purchasing efficiencies.

### ***Operating Expenses***

Operating expenses consist of research and development, sales and marketing, and general and administrative expenses. Operating expenses include personnel costs, legal fees, professional fees, service fees, insurance premiums, travel expense, facilities related costs and other costs and fees. The largest component of our operating expenses is personnel costs, consisting of salaries, benefits, incentive compensation and stock-based compensation. In any particular period, the timing and extent of personnel additions or reductions, legal activities, including patent enforcement actions, marketing programs, research efforts and a range of similar activities or actions could materially affect our operating expenses, both in absolute dollars and as a percentage of revenue.

During 2019, we project a significant decrease in operating expenses both in absolute dollars and as a percentage of revenue versus 2018. The expected decrease in operating expenses both in absolute dollars and as a percentage of revenue principally reflects our expectation that impairments and reserves during 2019 will be of a significantly lower magnitude than the impairment charge of \$7.4 million on construction in progress and the \$2.9 million reserve for uncollectible accounts receivable that we incurred during 2018. In the longer term, we expect that operating expenses will increase in absolute dollars, but decrease as a percentage of revenue.

### ***Research and Development Expenses***

Research and development expenses consist primarily of expenses for personnel engaged in the development of next generation aerogel compositions, form factors and manufacturing technologies. These expenses also include testing services, prototype expenses, consulting services, equipment depreciation, facilities costs and related overhead. We expense research and development costs as incurred. We expect to continue to devote substantial resources to the development of new aerogel technologies. We believe that these investments are necessary to maintain and improve our competitive position. We expect to continue to invest in research and engineering personnel and the infrastructure required in support of their efforts. While we expect that our research and development expenses will increase in absolute dollars but decrease as a percentage of revenue in the longer term, we expect such expenses will increase both in absolute dollars and as a percentage of revenue in 2019.

### *Sales and Marketing Expenses*

Sales and marketing expenses consist primarily of personnel costs, incentive compensation, marketing programs, travel and related costs, consulting expenses and facilities related costs. We have expanded our sales force and sales consultants globally to drive anticipated growth in customers and demand for our products. We expect that sales and marketing expenses will increase in absolute dollars but decrease as a percentage of revenue in both 2019 and in the longer term.

### *General and Administrative Expenses*

General and administrative expenses consist primarily of personnel costs, legal expenses, consulting and professional services, audit and tax consulting costs, and expenses for our executive, finance, legal, human resources and information technology organizations. General and administrative expenses have increased as we have incurred additional costs related to operating as a publicly-traded company, which include costs of compliance with securities, corporate governance and related laws and regulations, investor relations expenses, increased insurance premiums, including director and officer insurance, and increased audit and legal fees. In addition, we expect our general and administrative expenses to increase as we add general and administrative personnel to support the anticipated growth of our business. We also expect that the patent enforcement actions, described in more detail under “Legal Proceedings” in Part II, Item 1 of this Quarterly Report on Form 10-Q, if protracted, could result in significant legal expense over the medium to long-term. During 2019, we expect general and administrative expense will decrease both in absolute dollars and as a percentage of revenue due primarily to an expected reduction in the provision for uncollectible accounts receivable versus the provision in 2018. In the longer term, however, we expect that general and administrative expenses will increase in absolute dollars but continue to decline as a percentage of revenue.

### *Interest Expense, Net*

Interest expense, net consists primarily of fees and interest expense related to our revolving credit facility.

### *Provision for Income Taxes*

We have incurred net losses since inception and have not recorded benefit provisions for U.S. federal income taxes or state income taxes since the tax benefits of our net losses have been offset by valuation allowances due to the uncertainty associated with the utilization of net operating loss carryforwards.

## **Results of Operations**

### **Three months ended June 30, 2019 compared to the three months ended June 30, 2018**

The following tables set forth a comparison of the components of our results of operations for the periods presented:

### *Revenue*

	<b>Three Months Ended June 30,</b>				<b>Change</b>	
	<b>2019</b>		<b>2018</b>		<b>Amount</b>	<b>Percentage</b>
	<b>Amount</b>	<b>Percentage of Revenue</b>	<b>Amount</b>	<b>Percentage of Revenue</b>		
	(\$ in thousands)					
Revenue:						
Product	\$ 28,908	98%	\$ 21,115	97%	\$ 7,793	37%
Research services	625	2%	556	3%	69	12%
Total revenue	<u>\$ 29,533</u>	100%	<u>\$ 21,671</u>	100%	<u>\$ 7,862</u>	36%

The following chart sets forth product shipments in square feet for the periods presented:

	<b>Three Months Ended June 30,</b>		<b>Change</b>	
	<b>2019</b>	<b>2018</b>	<b>Amount</b>	<b>Percentage</b>
Product shipments in square feet (in thousands)	8,421	7,152	1,269	18%

Total revenue increased \$7.9 million, or 36%, to \$29.5 million for the three months ended June 30, 2019 from \$21.6 million in the comparable period in 2018 primarily as a result of an increase in product revenue.

Product revenue increased by \$7.8 million, or 37%, to \$28.9 million for the three months ended June 30, 2019 from \$21.1 million in the comparable period in 2018. This increase was principally the result of an increase in project work in the subsea market, growth in the petrochemical and refinery markets, particularly in the United States, and the impact of price increases enacted in early 2019, offset, in part, by a decrease in shipments to the building materials market.

Product revenue for the three months ended June 30, 2019 included \$6.6 million to a subsea contractor, \$4.3 million to a North American distributor and \$3.7 million to an Asian LNG project contractor. Product revenue for the three months ended June 30, 2018 included \$3.9 million and \$3.0 million to two North American distributors, respectively, and \$2.3 million to an Asian distributor.

The average selling price per square foot of our products increased by \$0.48, or 16%, to \$3.43 per square foot for the three months ended June 30, 2019 from \$2.95 per square foot for the three months ended June 30, 2018. The increase in average selling price principally reflected the impact of price increases enacted in early 2019. This increase in average selling price had the effect of increasing product revenue by \$4.0 million for the three months ended June 30, 2019 from the comparable period in 2018.

In volume terms, product shipments increased by 1.2 million square feet, or 18%, to 8.4 million square feet of aerogel products for the three months ended June 30, 2019, as compared to 7.2 million square feet for the three months ended June 30, 2018. The increase in product volume had the effect of increasing product revenue by \$3.8 million for the three months ended June 30, 2019 from the comparable period in 2018.

Research services revenue increased \$0.1 million, or 12%, to \$0.6 million for the three months ended June 30, 2019 from \$0.5 million in the comparable period in 2018. The increase was primarily due to the timing and amount of funding available under existing research contracts during the three months ended June 30, 2019 versus the comparable period in 2018.

Product revenue was 98% of total revenue for the three months ended June 30, 2019 and 97% of total revenue for the three months June 30, 2018. Research services revenue was 2% of total revenue for the three months ended June 30, 2019 and 3% of total revenue for the three months ended June 30, 2018.

### Cost of Revenue

	Three Months Ended June 30,						Change	
	2019			2018				
	Amount	Percentage of Related Revenue	Percentage of Total Revenue	Amount	Percentage of Related Revenue	Percentage of Total Revenue	Amount	Percentage
(\$ in thousands)								
Cost of revenue:								
Product	\$ 25,715	89%	87%	\$ 18,676	88%	86%	\$ 7,039	38%
Research services	304	49%	1%	251	45%	1%	53	21%
Total cost of revenue	<u>\$ 26,019</u>	88%	88%	<u>\$ 18,927</u>	87%	87%	<u>\$ 7,092</u>	37%

Total cost of revenue increased \$7.1 million, or 37%, to \$26.0 million for the three months ended June 30, 2019 from \$18.9 million in the comparable period in 2018. The increase in total cost of revenue was primarily the result of an increase in product cost of revenue.

Product cost of revenue increased by \$7.0 million, or 38%, to \$25.7 million for the three months ended June 30, 2019 from \$18.7 million in the comparable period in 2018. The \$7.0 million increase was the result of a \$6.5 million increase in material costs and a \$0.5 million increase in manufacturing expense. The increase in material costs was driven by the 1.2 million square foot, or 18%, increase in total product shipments and an unfavorable mix of products sold. The increase in manufacturing expense was the result of increases in waste disposal expense of \$0.2 million, maintenance expense of \$0.1 million, depreciation expense of \$0.1 million, and other manufacturing expenses of \$0.2 million, offset, in part, by a decrease in compensation and related costs of \$0.1 million.

Product cost of revenue as a percentage of product revenue increased to 89% during the three months ended June 30, 2019 from 88% during the three months ended June 30, 2018. This increase was the result of the unfavorable mix of products sold during the three months ended June 30, 2019 relative to the comparable period in 2018, offset, in part, by the high proportion of fixed manufacturing expenses that remained essentially unchanged despite a 37% increase in product revenue for the three months ended June 30, 2019 from the comparable period in 2018.

Research services cost of revenue increased \$0.1 million, or 21%, to \$0.3 million for the three months ended June 30, 2019 from \$0.2 million for the comparable period in 2018. Cost of research service revenue as a percentage of research services revenue increased to 49% during the three months ended June 30, 2019 from 45% in the comparable period in 2018 due to an increase in the proportion of outside services utilized to support the contracted research.

### **Gross Profit**

	Three Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Gross profit	\$ 3,514	12%	\$ 2,744	13%	\$ 770	28%

Gross profit increased by \$0.8 million, or 28%, to \$3.5 million for the three months ended June 30, 2019 from \$2.7 million in the comparable period in 2018. The increase in gross profit was the result of the \$7.9 million increase in total revenue, offset, in part, by the \$7.1 million increase in total cost of revenue. The increase in revenue was principally associated with the increase in project work in the subsea market, growth in the petrochemical and refinery markets in the United States, and price increases enacted in early 2019. The increase in total cost of revenue was driven principally by the 1.2 million square foot, or 18%, increase in product shipments and the unfavorable mix of products sold.

Gross profit as a percentage of total revenue decreased to 12% of total revenue for the three months ended June 30, 2019 from 13% in the comparable period in 2018.

### **Research and Development Expenses**

	Three Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Research and development expenses	\$ 1,868	6%	\$ 1,638	8%	\$ 230	14%

Research and development expenses increased by \$0.2 million, or 14%, to \$1.8 million for the three months ended June 30, 2019 from \$1.6 million in the comparable period in 2018. The \$0.2 million increase was the result of increases in patent related expense of \$0.1 million and all other research and development expenses of \$0.1 million.

Research and development expenses as a percentage of total revenue decreased to 6% for the three months ended June 30, 2019 from 8% in the comparable period in 2018 due primarily to the increase in revenue during the three months ended June 30, 2019.

### **Sales and Marketing Expenses**

	Three Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Sales and marketing expenses	\$ 3,509	12%	\$ 3,721	17%	\$ (212)	(6)%

Sales and marketing expenses decreased by \$0.2 million, or 6%, to \$3.5 million from \$3.7 million in the comparable period in 2018. The decrease was primarily the result of a decrease in compensation and related costs.

Sales and marketing expenses as a percentage of total revenue decreased to 12% for the three months ended June 30, 2019 from 17% in the comparable period in 2018 due primarily to the increase in revenue during the three months ended June 30, 2019.

## General and Administrative Expenses

	Three Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
General and administrative expenses	\$ 3,352	11%	\$ 4,240	20%	\$ (888)	(21)%

General and administrative expenses decreased by \$0.9 million, or 21%, to \$3.3 million during the three months ended June 30, 2019 from \$4.2 million in the comparable period in 2018. The \$0.9 million decrease was the result of decreases in compensation and related costs of \$0.6 million, the provision for uncollectible accounts receivable of \$0.3 million, and professional fees of \$0.1 million, offset, in part, by an increase in patent enforcement costs of \$0.1 million.

General and administrative expenses as a percentage of total revenue decreased to 11% for the three months ended June 30, 2019 from 20% in the comparable period in 2018 due to both the reduction in general and administrative expenses and the increase in revenue during the three months ended June 30, 2019.

## Interest Expense, net

	Three Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Interest expense, net	\$ (103)	(0)%	\$ (103)	(0)%	\$ —	—

Interest expense, net, consists primarily of fees and interest expense associated with outstanding balances under our revolving credit agreement and was \$0.1 million during both the three months ended June 30, 2019 and the comparable period in 2018.

## Six months ended June 30, 2019 compared to the six months ended June 30, 2018

The following tables set forth a comparison of the components of our results of operations for the periods presented:

### Revenue

	Six Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Revenue:						
Product	\$ 55,693	97%	\$ 43,636	98%	\$ 12,057	28%
Research services	1,752	3%	1,109	2%	643	58%
Total revenue	<u>\$ 57,445</u>	<u>100%</u>	<u>\$ 44,745</u>	<u>100%</u>	<u>\$ 12,700</u>	<u>28%</u>

The following chart sets forth product shipments in square feet for the periods presented:

	Six Months Ended June 30,		Change	
	2019	2018	Amount	Percentage
Product shipments in square feet (in thousands)	17,106	14,894	2,212	15%

Total revenue increased \$12.7 million, or 28%, to \$57.4 million for the six months ended June 30, 2019 from \$44.7 million in the comparable period in 2018 primarily as a result of an increase in product revenue.

Product revenue increased by \$12.1 million, or 28%, to \$55.7 million for the six months ended June 30, 2019 from \$43.6 million in the comparable period in 2018. This increase was principally the result of an increase in project work in the subsea market, growth in the petrochemical and refinery markets in the United States, and the impact of price increases enacted in early 2019, offset, in part by a decrease in shipments to the Asian energy and building materials markets.

Product revenue for the six months ended June 30, 2019 included \$10.0 million to a North American distributor and \$6.8 million and \$5.7 million to two subsea contractors, respectively. Product revenue for the six months ended June 30, 2018 included \$10.6 million to a North American distributor and \$6.3 million to an Asian distributor.

The average selling price per square foot of our products increased by \$0.33, or 11%, to \$3.26 per square foot for the six months ended June 30, 2019 from \$2.93 per square foot for the six months ended June 30, 2018. The increase in average selling price principally reflected the impact of price increases enacted in early 2019. This increase in average selling price had the effect of increasing product revenue by \$5.6 million for the six months ended June 30, 2019 from the comparable period in 2018.

In volume terms, product shipments increased by 2.2 million square feet, or 15%, to 17.1 million square feet of aerogel products for the six months ended June 30, 2019, as compared to 14.9 million square feet for the six months ended June 30, 2018. The increase in product volume had the effect of increasing product revenue by \$6.5 million for the six months ended June 30, 2019 from the comparable period in 2018.

Research services revenue increased \$0.6 million, or 58%, to \$1.7 million for the six months ended June 30, 2019 from \$1.1 million in the comparable period in 2018. The increase was primarily due to the timing and amount of funding available under existing research contracts during the six months ended June 30, 2019 from the comparable period in 2018.

Product revenue was 97% of total revenue for the six months ended June 30, 2019 and 98% of total revenue for the six months ended June 30, 2018. Research services revenue was 3% of total revenue for the six months ended June 30, 2019 and 2% of total revenue for the six months ended June 30, 2018.

### Cost of Revenue

	Six Months Ended June 30,						Change	
	2019			2018				
	Amount	Percentage of Related Revenue	Percentage of Total Revenue	Amount	Percentage of Related Revenue	Percentage of Total Revenue	Amount	Percentage
(\$ in thousands)								
Cost of revenue:								
Product	\$ 49,193	88%	86%	\$ 38,699	89%	86%	\$ 10,494	27%
Research services	1,020	58%	2%	492	44%	1%	528	107%
Total cost of revenue	<u>\$ 50,213</u>	87%	87%	<u>\$ 39,191</u>	88%	88%	<u>\$ 11,022</u>	28%

Total cost of revenue increased \$11.0 million, or 28%, to \$50.2 million for the six months ended June 30, 2019 from \$39.2 million in the comparable period in 2018. The increase in total cost of revenue was primarily the result of an increase in product cost of revenue.

Product cost of revenue increased \$10.5 million, or 27%, to \$49.2 million for the six months ended June 30, 2019 from \$38.7 million in the comparable period in 2018. The \$10.5 million increase was the result of a \$10.2 million increase in material costs and a \$0.3 million increase in manufacturing expense. The increase in material costs was driven principally by the 2.2 million square feet, or 15%, increase in product shipments and an unfavorable mix of products sold. The increase in manufacturing expense was the result of increases in waste disposal expense of \$0.4 million, compensation and related costs of \$0.1 million, and all other manufacturing expenses of \$0.3 million, offset, in part, by a decrease in depreciation expense of \$0.5 million.

Product cost of revenue as a percentage of product revenue decreased to 88% during the six months ended June 30, 2019 from 89% during the six months ended June 30, 2018. This decrease was the result of the high proportion of fixed manufacturing expenses that remained essentially unchanged despite a 28% increase in product revenue for the six months ended June 30, 2019 from the comparable period in 2018, offset, in part, by the unfavorable mix of products sold during the six months ended June 30, 2019 from the comparable period in 2018.

Research services cost of revenue increased \$0.5 million, or 107%, to \$1.0 million for the six months ended June 30, 2019 from \$0.5 million for the comparable period in 2018. Cost of research service revenue as a percentage of research services revenue increased to 58% during the six months ended June 30, 2019 from 44% in the comparable period in 2018 due to an increase in the proportion of outside services utilized to support the contracted research.



General and administrative expenses as a percentage of total revenue decreased to 13% for the six months ended June 30, 2019 from 19% in the comparable period in 2018 due primarily to the increase in revenue during the six months ended June 30, 2019.

### *Interest Expense, net*

	Six Months Ended June 30,				Change	
	2019		2018		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Interest expense, net	\$ (144)	(0)%	\$ (195)	(0)%	\$ 51	(26)%

Interest expense, net, consists primarily of fees and interest expense associated with outstanding balances under our revolving credit agreement and was \$0.1 million and \$0.2 million during the six months ended June 30, 2019 and 2018, respectively.

## **Liquidity and Capital Resources**

### *Overview*

We have experienced significant losses and invested substantial resources since our inception to develop, commercialize and protect our aerogel technology and to build a manufacturing infrastructure capable of supplying aerogel products at the volumes and costs required by our customers. These investments have included research and development and other operating expenses, capital expenditures and investment in working capital balances.

Through 2015, we experienced revenue growth and gained share in our target markets. Despite a decline in revenue in 2016, 2017 and 2018, our financial projections anticipate long-term revenue growth, with increasing levels of gross profit and improved cash flows from operations. To support this growth, we have initiated a plan to increase the capacity of our East Providence, Rhode Island manufacturing facility to approximately 60 million square feet of aerogel blankets by the end of 2020. We expect to incur up to an additional \$12.0 million in expenditures related to this plan through 2020.

We believe that our existing cash balance and available credit will be sufficient to fund a portion of the planned expansion of our East Providence manufacturing facility and other strategic business initiatives. In January 2019, we received a second \$5.0 million prepayment pursuant to the supply agreement with BASF. On March 4, 2019, we extended the maturity of our revolving credit facility to April 28, 2020. In addition, we plan to manage other capital expenditures and working capital balances during 2019 and 2020 to maintain the cash resources required to support current operating requirements.

However, we will need to supplement our cash balance and available credit with anticipated cash flows from operations, debt financings, customer prepayments, technology licensing agreements or equity financings to provide the capital required to complete the planned expansion of our existing manufacturing facility and to fund other strategic business initiatives.

### *Primary Sources of Liquidity*

Our principal sources of liquidity are currently our cash and cash equivalents and our revolving credit facility with Silicon Valley Bank. Cash and cash equivalents consist primarily of cash and money market accounts on deposit with banks. As of June 30, 2019, we had \$3.3 million of cash and cash equivalents.

At June 30, 2019, we had debt obligations of \$2.9 million related to borrowings under our revolving credit facility with Silicon Valley Bank, \$0.6 million of outstanding letters of credit secured by the revolving credit facility and an obligation of \$10.0 million associated with prepayments received pursuant to our supply agreement with BASF.

We have maintained the revolving credit facility, as amended from time to time, with Silicon Valley Bank since March 2011. On March 4, 2019, our revolving credit facility was amended to extend the maturity date of the facility to April 28, 2020. The amendment to the credit facility also (i) revised the definition of "Borrowing Base" to remove the eligible inventory component of the Borrowing Base, (ii) removed the Adjusted Quick Ratio financial covenant set forth in the loan agreement and (iii) established certain minimum EBITDA levels with respect to the minimum EBITDA financial covenant for the extended term.

Under our revolving credit facility, we are permitted to borrow a maximum of \$20.0 million, subject to continued covenant compliance and borrowing base requirements. At our election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In

addition, we are required to pay a monthly unused revolving line facility fee of 0.5% per annum of the average unused portion of the revolving credit facility. We intend to extend or replace the facility prior to its maturity.

Under the revolving credit facility, we are required to comply with both non-financial and financial covenants, including the minimum EBITDA covenant, as defined in the loan agreement. At June 30, 2019, we were in compliance with all such covenants.

The effective amount available to us under the facility at June 30, 2019 was \$6.4 million after giving effect to the \$2.9 million of borrowings and \$0.6 million of letters of credit outstanding.

### ***Analysis of Cash Flow***

#### ***Net Cash Used in Operating Activities***

During the six months ended June 30, 2019, we used \$1.9 million in net cash in operating activities, as compared to the use of \$6.2 million in net cash during the comparable period in 2018, a decrease in the use of cash of \$4.3 million. This decrease in use of cash was the result of decreases in cash used by changes in operating assets and liabilities of \$2.3 million and in net loss adjusted for non-cash items of \$2.0 million.

#### ***Net Cash Used in Investing Activities***

Net cash used in investing activities is primarily related to capital expenditures to support our growth. Net cash used in investing activities for the six months ended June 30, 2019 and 2018 was \$1.3 million and \$1.7 million, respectively, in capital expenditures primarily for machinery and equipment to improve the capacity, throughput and efficiency of our East Providence facility.

#### ***Net Cash Used in Financing Activities***

Net cash provided by financing activities for the six months ended June 30, 2019 totaled \$3.2 million and consisted of \$56.2 million in borrowings under our line of credit and \$5.0 million in prepayment proceeds under our supply agreement with BASF, offset, in part, by \$57.5 million of repayments under our line of credit and \$0.5 million in cash used for payments made for employee tax withholdings associated with the vesting of restricted stock units.

Net cash provided by financing activities for the six months ended June 30, 2018 totaled \$4.5 million and consisted of \$5.0 million in prepayment proceeds under our supply agreement with BASF, offset, in part, by \$0.5 million in cash used for payments made for employee tax withholdings associated with the vesting of restricted stock units. In addition, we borrowed and repaid \$12.1 million in advances under our line of credit.

### **Off Balance Sheet Arrangements**

Since inception, we have not engaged in any off balance sheet activities as defined in Item 303(a)(4) of Regulation S-K.

### **Contractual Obligations and Commitments**

There have been no material changes to our contractual obligations and commitments as reported in our Annual Report.

### **Recent Accounting Pronouncements**

Information regarding new accounting pronouncements is included in note 2 to our unaudited consolidated financial statements contained in Item 1 of this Quarterly Report on Form 10-Q.

### **Critical Accounting Policies and Estimates**

Our financial statements are prepared in accordance with U.S. GAAP. The preparation of our financial statements and related disclosures requires us to make estimates, assumptions and judgments that affect the reported amount of assets, liabilities, revenue, costs and expenses and related disclosures. We believe that the estimates, assumptions and judgments involved in these accounting policies have the greatest potential impact on our financial statements and, therefore, we consider these to be our critical accounting policies. Accordingly, we evaluate our estimates and assumptions on an ongoing basis. Our actual results may differ from these estimates under different assumptions and conditions. See our Annual Report and note 2 to our consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for information about these critical accounting policies, as well as a description of our other significant accounting policies.

## Certain Factors That May Affect Future Results of Operations

The SEC encourages companies to disclose forward-looking information so that investors can better understand a company's future prospects and make informed investment decisions. This Quarterly Report on Form 10-Q contains such "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995. These statements involve known and unknown risks, uncertainties and other important factors which may cause our actual results, performance or achievements to be materially different from any future results, performances or achievements expressed or implied by the forward-looking statements. Forward-looking statements include, but are not limited to, statements about: our beliefs in the appropriateness of our assumptions, the accuracy of our estimates regarding expenses, loss contingencies, future revenues, future profits, uses of cash, available credit, capital requirements, and the need for additional financing; the performance of our aerogel blankets; our expectation that we will be successful in obtaining, enforcing and defending our patents against competitors and that such patents are valid and enforceable; our belief that our products possess strong competitive advantages over traditional insulation materials, including the superior thermal performance and the thin, easy-to-use and durable blanket form of our products; our plans to expand capacity in our East Providence, Rhode Island manufacturing facility; our estimates of annual production capacity; our strategic partnership with BASF and the potential benefits of such a relationship, including the potential for it to create new product and market opportunities; the BASF Supply Agreement, our supply to BASF of its Spaceloft A2 product and newly developed product, the potential for future cash advances from BASF under the BASF Supply Agreement (payment of which are subject to certain conditions) to provide a source of financing for some portion of the cost of the planned capacity expansion in our East Providence, Rhode Island manufacturing facility and the potential for BASF to become a significant customer for our products; our joint development agreement with BASF, and the potential for it to support the development of new aerogel products and technologies; our beliefs about the usefulness of the square foot operating metric; our beliefs about the financial metrics that are indicative of our core performance; our beliefs about the usefulness of our presentation of Adjusted EBITDA; our expectations about the effect of manufacturing capacity on financial metrics such as Adjusted EBITDA; our expectations about future revenues, expenses, gross profit, net loss, loss per share and Adjusted EBITDA, sources and uses of cash, capital requirements and the sufficiency of our existing cash balance and available credit; our beliefs about the outcome, effects or estimated costs of current or potential litigation or their respective timing, including expected legal expense in connection with our patent enforcement actions; our plans to devote substantial resources to the development of new aerogel technology; our expectations about product mix; our expectations about future material costs and manufacturing expenses as a percentage of revenue; our expectations of future gross profit and the effect of manufacturing expenses, manufacturing capacity and productivity on gross profit; our expectations about our resources and other investments in new technology and related research and development activities and associated expenses; our expectations about short and long term (a) research and development (b) general and administrative and (c) sales and marketing expenses; our expectations of revenue growth, increased gross profit, and improving cash flows over the long term; our intentions about managing capital expenditures and working capital balances; our expectations about incurring significant capital expenditures in the future; our expectations about the expansion of our workforce and resources and its effect on sales and marketing, general and administrative, and related expenses; our expectations about future product revenue and demand for our products; our expectations about the effect of stock based compensation on various costs and expenses; our expectations about potential sources of future financing; our beliefs about the impact of accounting policies on our financial statements; our beliefs about the effect of interest rates, inflation and foreign currency fluctuations on our results of operations and financial condition; and our beliefs about the expansion of our international operations.

Words such as "may," "will," "anticipate," "estimate," "expects," "projects," "intends," "plans," "believes" and words and terms of similar substance used in connection with any discussion of future operating or financial performance, identify forward-looking statements. All forward-looking statements are management's present expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those described in the forward-looking statements. These risks include, but are not limited to, those set forth in this Quarterly Report on Form 10-Q and under the heading "Risk Factors" contained in Item 1A of our Annual Report.

In light of these assumptions, risks and uncertainties, the results and events discussed in the forward-looking statements contained in this Quarterly Report on Form 10-Q might not occur. Stockholders and other readers are cautioned not to place undue reliance on the forward-looking statements, which speak only as of the date of this Quarterly Report on Form 10-Q. We are not under any obligation, and we expressly disclaim any obligation, to update or alter any forward-looking statements, whether as a result of new information, future events or otherwise. All subsequent forward-looking statements attributable to Aspen Aerogels, Inc. or to any person acting on its behalf are expressly qualified in their entirety by the cautionary statements contained or referred to in this section.

### Item 3. Quantitative and Qualitative Disclosures About Market Risk.

Market risk represents the risk of loss that may impact our financial position due to adverse changes in financial market prices and rates. Our market risk exposure results primarily from fluctuations in interest rates as well as from inflation. In the normal course of business, we are exposed to market risks, including changes in interest rates which affect our line of credit under our revolving

credit facility as well as cash flows. We may also face additional exchange rate risk in the future as we expand our business internationally.

### ***Interest Rate Risk***

We are exposed to changes in interest rates in the normal course of our business. At June 30, 2019, we had unrestricted cash and cash equivalents of \$3.3 million. These amounts were held for working capital and capital expansion purposes and were invested primarily in deposit and money market accounts at a major financial institution in North America. Due to the short-term nature of these investments, we believe that our exposure to changes in the fair value of our cash as a result of changes in interest rates is not material.

As of June 30, 2019, we had \$2.9 million drawn and outstanding on our revolving credit facility. At June 30, 2019, we also had \$0.6 million of outstanding letters of credit supported by the revolving credit facility.

Under our revolving credit facility, we are permitted to borrow a maximum of \$20.0 million, subject to continued covenant compliance and borrowing base requirements. At our election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 2.00% per annum, while LIBOR-based rates vary from LIBOR plus 3.75% per annum to LIBOR plus 4.25% per annum. In addition, we are required to pay a monthly unused revolving line facility fee of 0.5% per annum of the average unused portion of the revolving credit facility. The maturity date of our revolving credit facility is April 28, 2020.

At June 30, 2019, the amount available to us under the revolving credit facility was \$6.4 million after giving effect to the \$2.9 million in borrowings and \$0.6 million of letters of credit outstanding under the facility.

### ***Inflation Risk***

Although we expect that our operating results will be influenced by general economic conditions, we do not believe that inflation has had a material effect on our results of operations during the periods presented in this report. However, our business may be affected by inflation in the future.

### ***Foreign Currency Exchange Risk***

We are subject to inherent risks attributed to operating in a global economy. Virtually all of our revenue, receivables, purchases and debts are denominated in U.S. dollars.

## **Item 4. Controls and Procedures.**

### ***(a) Evaluation of Disclosure Controls and Procedures .***

We maintain disclosure controls and procedures that are designed to ensure that information required to be disclosed in the reports that we file or submit under the Securities Exchange Act of 1934, as amended (the Exchange Act), is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

As of June 30, 2019, our management, with the participation of our principal executive officer and principal financial officer, evaluated the effectiveness of our disclosure controls and procedures (as defined in Rules 13a-15(e) and 15d-15(e) under the Exchange Act). Our management recognizes that any controls and procedures, no matter how well designed and operated, can provide only reasonable assurance of achieving their objectives, and management necessarily applies its judgment in evaluating the cost-benefit relationship of possible controls and procedures. Based on such evaluation, our principal executive officer and principal financial officer have concluded that, as of June 30, 2019, our disclosure controls and procedures were effective to ensure that information required to be disclosed by us in the reports that we file or submit under the Exchange Act is recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and is accumulated and communicated to our management, including our principal executive officer and principal financial officer, or persons performing similar functions, as appropriate to allow timely decisions regarding required disclosure.

(b) *Changes in Internal Controls* .

During the six months ended June 30, 2019, there were no changes in our internal control over financial reporting, as such term is defined in Rules 13a-15(f) and 15(d)-15(f) promulgated under the Exchange Act, that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

## PART II — OTHER INFORMATION

### Item 1. Legal Proceedings.

#### *Patent Enforcement Actions*

In May 2016, we filed a complaint for patent infringement against Nano Tech Co., Ltd., or Nano, and Guangdong Alison Hi Tech., Ltd., or Alison, and together with Nano, the Respondents, in the International Trade Commission, or ITC. The ITC complaint alleged that these two China-based companies engaged in unfair trade practices by importing aerogel products in the United States that infringed, and/or are manufactured by processes that infringe, several of our patents in violation of Section 337 of the Tariff Act. In the ITC complaint, we sought exclusion orders from the ITC that direct the United States Customs and Border Protection to stop the importation of these infringing products. In June 2016, the ITC instituted an investigation based on our complaint. In September 2017, the Administrative Law Judge, or ALJ, presiding over the ITC investigation issued an Initial Determination finding that Alison and Nano infringed our patents relating to aerogel insulation and/or the methods of manufacturing aerogel insulation. As part of the Initial Determination, the ALJ found that Alison and Nano infringed all the patent claims asserted against each of them across the three asserted patents and that Alison and Nano failed to prove that the asserted claims were invalid. The ALJ also recommended a limited exclusion order as a remedy to prevent the importation of infringing aerogel products into the United States. In February 2018, the ITC issued its final determination confirming the ALJ's infringement and validity determinations except with respect to one dependent product claim where the ITC found the claim not infringed. The ITC also revised some of the ALJ's claim constructions. However, the ITC affirmed that Alison and Nano each violated Section 337 of the Tariff Act and issued a limited exclusion order prohibiting importation of infringing aerogel insulation products manufactured by Alison and Nano. The exclusion order, which is enforced by the United States Customs and Border Protection, is currently in effect. In June 2018, Alison has filed a notice of appeal seeking a review of the ITC determination and order by the United States Court of Appeals for the Federal Circuit (CAFC). Alison has sought an appeal of ITC's finding that a product composition patent asserted by us against Alison is valid and infringed. Oral arguments at CAFC took place in June 2019. As neither respondents appealed the ITC findings of validity or infringement with respect to asserted process patents, the exclusion order remains valid and enforced irrespective of the outcome of the appeal. In addition to Respondents' contention at the ITC that the asserted patents were invalid, Alison also filed petitions with the United States Patent and Trademark Office, or USPTO, requesting Inter-Partes Review to cancel certain claims in three of our manufacturing process patents and one product patent. A three-member panel of Administrative Patent Judges at the USPTO denied all of Alison's petitions to institute Inter-Partes Review challenging the validity of these Aspen patents. Alison also filed similar requests with the Chinese Patent Office, or SIPO, seeking to invalidate two of our Chinese manufacturing process patents and two of our Chinese product patents. After the conclusion of the oral proceedings and before any decision issued by the SIPO, Alison withdrew all of its requests for invalidation of our Chinese patents. In May 2018, Alison filed another request seeking invalidation of one of our manufacturing process patents at SIPO, the same patent that it previously sought to invalidate and subsequently withdrew the request in 2017. After conducting an oral proceeding on September 6, 2018, the Patent Reexamination Board of SIPO, or PRB, issued a decision on October 26, 2018 holding Aspen's issued patent as amended as valid. Alison has appealed the PRB's decision to the Beijing IP court. The appeal is currently ongoing. Nano has also filed a request seeking invalidation of a product patent at PRB of SIPO on which oral hearings took place in July 2019.

In April 2016, we also filed a patent infringement suit at the District Court in Mannheim, Germany against the Respondents and two European resellers asserting their infringement of one of our German patents. We subsequently asserted infringement of another three patents against Nano and a European reseller of Alison's products at the Mannheim court. We have since settled with one European reseller in exchange for a commitment not to procure infringing products and cooperation with our case. In January 2018, the court issued a series of judgments by acknowledgement (German, "Anerkenntnisurteil") finding the second reseller, Hiltex, liable for infringement and also issued injunctions against Hiltex. The judgments resulted from a settlement agreement in which Hiltex agreed not to resell the infringing products in Europe where at least one of the asserted patents are active. Nano and Alison also initiated a nullity actions in German Federal Patent Court in Munich against our asserted German patents. On the first patent, EP1638750 (750 Patent) challenged at the Federal Patent Court, on September 25, 2018 the Court conducted an oral proceeding and determined that the patent is valid as originally issued and dismissed the challenge to its validity. They likewise filed an opposition to one of the asserted patents at the European Patent Office, or EPO. In December 2018, the opposition division of EPO determined the patent, EP2813338 (338 Patent) was invalid on formality grounds and decided to revoke it. In July 2019, we have filed a notice of appeal to the EPO Board of appeals seeking to set aside the decision of the opposition division. On March 8, 2019, Mannheim court issued two separate judgments in cases against Nano and Alison, respectively. The Mannheim court determined that both Nano and Alison are infringing on Aspen's 750 Patent in connection with their respective products. The court also issued injunctions prohibiting the offer, putting on the market, using, importing or possessing the infringing products. The court found the defendants liable to us for damages since September 22, 2012. The court also ordered the defendants to provide information on the scope of the acts of infringement committed since August 22, 2012, and a recall of infringing products. The court also ordered Nano and Alison to bear the costs of the legal proceedings and reimburse statutory attorneys' costs and expenses to us, that exact amount of which is yet to be determined. Nano and Alison may appeal the judgments of the Mannheim court within 30 days from the date they have been served with the decision, respectively. On March 19 and 20, 2019 the German Federal Patent Court in Munich conducted oral proceedings

and voided four claims in EP2415577 (577 Patent) and confirmed the validity of challenged claims in EP2422950 (950 Patent) within the scope of silica gels. The infringement proceedings at the Mannheim court based on 577 Patent and 950 Patent are ongoing. Additionally, a reseller of Nano's products in Taiwan challenged the validity of one of our patents in Taiwan. After careful review of our response, Taiwanese patent office has determined the patent as valid and dismissed the challenge in December 2018. In late 2018, LG Chem Ltd. has sought to challenge one of our patents in Korea. The resulting patent invalidation trial is ongoing.

Due to their nature, it is difficult to predict the outcome or the costs involved in any litigation or administrative proceedings, including any appeals process. Furthermore, the Respondents may have significant resources and interest to litigate and therefore, these litigation matters could be protracted and may ultimately involve significant legal expenses. In addition to the foregoing, we have been and may be from time to time party to other legal proceedings that arise in the ordinary course of business and to other patent enforcement actions to assert our patent rights.

#### *Brazilian Enforcement Action*

In August 2018, we filed an enforcement suit against Qualiman Engenharia E Montagens LTDA, or Qualiman, one of our South American customers, in civil court in Sao Paulo, Brazil seeking payment of past due invoices totaling approximately \$2.9 million. In October 2018, the Brazilian court ruled in our favor with respect to Qualiman's obligation to pay us immediately. As part of the remedy, the Court ordered Qualiman's customer, Petroleo Brasileiro S.A., or Petrobras, to redirect part of its payments to Qualiman to a court-administered bank account and other appropriate actions. Subsequently, we learned that Qualiman has laid off a substantial portion of its installers and threatened to walk away from Petrobras' contract. In connection with such layoffs, a Brazilian labor court is addressing reparations to laid-off workers. We learned that Petrobras and Qualiman are seeking to renegotiate the contract between them in connection with this project. On February 26, 2019, an appeals court dismissed Qualiman's appeal of the decision of the Sao Paulo civil court on the merits. As of June 30, 2019 we have recovered \$0.3 million through the court actions. Our recovery of additional amounts owed is uncertain.

#### **Item 1A. Risk Factors.**

There have been no material changes to the risk factors included in our Annual Report.

#### **Item 2. Unregistered Sales of Equity Securities and Use of Proceeds.**

(a) *Unregistered Sales of Equity Securities* . Not applicable.

(b) *Use of Proceeds from Initial Public Offering of Common Stock* . Not applicable.

(c) *Purchases of Equity Securities By the Issuer and Affiliated Purchasers* . We did not repurchase any of our equity securities during the quarter ended June 30, 2019.

#### **Item 3. Defaults Upon Senior Securities.**

None.

#### **Item 4. Mine Safety Disclosures.**

Not applicable.

#### **Item 5. Other Information.**

On August 1, 2019, the Company entered into an amendment (the "Amendment") to its employment agreement with Donald R. Young, the Company's Chief Executive Officer. Mr. Young's employment agreement with the Company (the "Executive Agreement"), executed as of November 7, 2018 and effective as of January 1, 2019, provided for a two year period during which Mr. Young is eligible to receive a bonus upon a change of control (as defined in the Executive Agreement). The Amendment extends the period to a total of three years such that the period ends on December 31, 2021.

**Item 6. Exhibits.**

(a) Exhibits

- 10.1 + [Amendment to Executive Agreement, dated August 1, 2019, by and between the Company and Donald R. Young.](#)
  - 31.1 [Certification of principal executive officer under Section 302\(a\) of the Sarbanes-Oxley Act of 2002.](#)
  - 31.2 [Certification of principal financial officer under Section 302\(a\) of the Sarbanes-Oxley Act of 2002.](#)
  - 32 [Certifications of the principal executive officer and the principal financial officer under Section 906 of the Sarbanes-Oxley Act of 2002.](#)
  - 101 The following materials from Aspen Aerogels, Inc.'s Quarterly Report on Form 10-Q for the quarter ended June 30, 2019, formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets (unaudited) as of June 30, 2019 and December 31, 2018, (ii) the Consolidated Statements of Operations (unaudited) for the three and six months ended June 30, 2019 and 2018, (iii) the Consolidated Statements of Stockholders' Equity (unaudited) for the three and six months ended June 30, 2019 and 2018 (iv) the Consolidated Statements of Cash Flows (unaudited) for the six months ended June 30, 2019 and 2018, and (v) the Notes to Consolidated Financial Statements (unaudited).
- + Management contract or compensatory plan or arrangement.

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned thereunto duly authorized.

ASPEN AEROGELS, INC.

Date: August 1, 2019

By: /s/ Donald R. Young  
Donald R. Young  
President and Chief Executive Officer  
(principal executive officer)

Date: August 1, 2019

By: /s/ John F. Fairbanks  
John F. Fairbanks  
Vice President, Chief Financial Officer and Treasurer  
(principal financial officer and principal accounting officer)

AMENDMENT TO EXECUTIVE AGREEMENT

This Amendment ("Amendment"), dated as of August 1, 2019, is entered into by and between Aspen Aerogels, Inc., a Delaware corporation (the "Company"), and Donald R. Young (the "Executive"), for purposes of amending that certain Executive Agreement between the parties effective as of January 1, 2019 (the "Executive Agreement").

RECITALS

Whereas, the Company and the Executive would like to amend the Executive Agreement to extend the length of the "Performance Period" (as defined in the Executive Agreement); and

Whereas, pursuant to Section 10(h) of the Executive Agreement, the Executive Agreement may be amended with the written consent of both parties.

Now, therefore, in consideration of mutual promises and other terms set forth below, the Company and the Executive agree as follows:

- 1. Amendment. The Executive Agreement is hereby amended as follows:

The definition of "Performance Period" in Section 1 of the Executive Agreement shall be deleted in its entirety and replaced with the following:

"Performance Period" means the approximately three (3) year period commencing on the Effective Date and ending on December 31, 2021.

- 2. Miscellaneous Provisions. Capitalized terms used but not defined within this Amendment have the meanings specified within the Executive Agreement. Except as expressly modified by this Amendment, all terms and conditions of the Executive Agreement remain in full force and effect. This Amendment can be executed by the parties hereto by facsimile and in counterparts, each of which is deemed an original and both of which taken together constitutes one agreement binding upon the parties hereto. All issues concerning this Amendment shall be governed by and construed in accordance with the laws of the Commonwealth of Massachusetts, without giving effect to any choice of law or conflict of law provision or rule (whether of the Commonwealth of Massachusetts or any other jurisdiction) that would cause the application of the law of any jurisdiction other than the Commonwealth of Massachusetts.

In witness whereof, the Parties hereto enter into this Amendment by signing below.

ASPEN AEROGELS, INC.

/s/ Donald R. Young  
Donald R. Young

By: /s/ John Fairbanks

John Fairbanks  
Name

August 1, 2019  
Date

Chief Financial Officer  
Title

August 1, 2019  
Date

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## CERTIFICATIONS UNDER SECTION 302

I, Donald R. Young, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Aspen Aerogels, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 1, 2019

/s/ Donald R. Young

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Donald R. Young  
President and Chief Executive Officer  
(principal executive officer)

## CERTIFICATIONS UNDER SECTION 302

I, John F. Fairbanks, certify that:

1. I have reviewed this Quarterly Report on Form 10-Q of Aspen Aerogels, Inc.;
2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;
3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the registrant as of, and for, the periods presented in this report;
4. The registrant's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the registrant and have:
  - a) designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the registrant, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;
  - b) designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;
  - c) evaluated the effectiveness of the registrant's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and
  - d) disclosed in this report any change in the registrant's internal control over financial reporting that occurred during the registrant's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the registrant's internal control over financial reporting; and
5. The registrant's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the registrant's auditors and the audit committee of the registrant's board of directors (or persons performing the equivalent functions):
  - a) all significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the registrant's ability to record, process, summarize and report financial information; and
  - b) any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: August 1, 2019

/s/ John F. Fairbanks

John F. Fairbanks

Vice President, Chief Financial Officer and Treasurer (principal financial officer and principal accounting officer)

**CERTIFICATIONS UNDER SECTION 906**

Pursuant to Section 906 of the Sarbanes-Oxley Act of 2002 (subsections (a) and (b) of section 1350, chapter 63 of title 18, United States Code), each of the undersigned officers of Aspen Aerogels, Inc., a Delaware corporation (the "Company"), does hereby certify, to such officer's knowledge, that:

The Quarterly Report on Form 10-Q for the quarter ended June 30, 2019 (the "Form 10-Q") of the Company fully complies with the requirements of Section 13(a) or 15(d) of the Securities Exchange Act of 1934, and the information contained in the Form 10-Q fairly presents, in all material respects, the financial condition and results of operations of the Company.

Dated: August 1, 2019

/s/ Donald R. Young

Donald R. Young  
President and Chief Executive Officer  
(principal executive officer)

Dated: August 1, 2019

/s/ John F. Fairbanks

John F. Fairbanks  
Vice President, Chief Financial Officer and Treasurer  
(principal financial officer and principal accounting officer)

A signed original of this written statement required by Section 906 has been provided to the Company and will be retained by the Company and furnished to the Securities and Exchange Commission or its staff upon request.