
**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 September 30, 2016

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

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 and posted on its corporate Web site, if any, every Interactive Data File required to be submitted and posted 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 and post such files). Yes ☒ No ☐

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

Large accelerated filer	☐	Accelerated filer	☒
Non-accelerated filer	☐ (Do not check if a smaller reporting company)	Smaller reporting company	☐

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 October 31, 2016, the registrant had 23,366,937 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 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.

PART I — FINANCIAL INFORMATION

Item 1. Financial Statements.

ASPEN AEROGELS, INC.

Consolidated Balance Sheets

(Unaudited)

	September 30, 2016	December 31, 2015
	(In thousands, except share and per share data)	
Assets		
Current assets:		
Cash and cash equivalents	\$ 21,129	\$ 32,804
Accounts receivable, net of allowances of \$101 and \$89, respectively	19,625	20,624
Inventories	12,902	6,532
Prepaid expenses and other current assets	1,831	1,687
Total current assets	55,487	61,647
Property, plant and equipment, net	81,905	78,322
Other assets	79	105
Total assets	\$ 137,471	\$ 140,074
Liabilities and Stockholders' Equity		
Current liabilities:		
Capital leases, current portion	\$ 41	\$ 67
Accounts payable	11,544	10,684
Accrued expenses	4,145	5,568
Deferred revenue	753	681
Other current liabilities	—	409
Total current liabilities	16,483	17,409
Capital leases, excluding current portion	11	40
Other long-term liabilities	703	151
Total liabilities	17,197	17,600
Commitments and contingencies (Note 6)		
Stockholders' equity:		
Preferred stock, \$0.00001 par value; 5,000,000 shares authorized, no shares issued and outstanding at September 30, 2016 and December 31, 2015	—	—
Common stock, \$0.00001 par value; 125,000,000 shares authorized, 23,366,937 and 23,184,852 shares issued and outstanding at September 30, 2016 and December 31, 2015, respectively	—	—
Additional paid-in capital	532,056	527,975
Accumulated deficit	(411,782)	(405,501)
Total stockholders' equity	120,274	122,474
Total liabilities and stockholders' equity	\$ 137,471	\$ 140,074

See accompanying notes to unaudited consolidated financial statements.

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
	(In thousands, except share and per share data)			
Revenue:				
Product	\$ 28,877	\$ 30,926	\$ 88,286	\$ 83,891
Research services	683	613	1,813	1,243
Total revenue	29,560	31,539	90,099	85,134
Cost of revenue:				
Product	22,790	26,017	69,505	69,676
Research services	368	350	1,012	663
Gross profit	6,402	5,172	19,582	14,795
Operating expenses:				
Research and development	1,328	1,146	3,924	4,001
Sales and marketing	3,056	2,793	8,939	7,847
General and administrative	4,422	3,709	12,229	10,866
Total operating expenses	8,806	7,648	25,092	22,714
Loss from operations	(2,404)	(2,476)	(5,510)	(7,919)
Other expense, net				
Interest expense, net	(37)	(46)	(115)	(136)
Postponed financing costs	(656)	—	(656)	—
Total other expense, net	(693)	(46)	(771)	(136)
Net loss	\$ (3,097)	\$ (2,522)	\$ (6,281)	\$ (8,055)
Net loss per share:				
Basic	\$ (0.13)	\$ (0.11)	\$ (0.27)	\$ (0.35)
Diluted	\$ (0.13)	\$ (0.11)	\$ (0.27)	\$ (0.35)
Weighted-average common shares outstanding:				
Basic and diluted	23,168,251	23,060,456	23,114,280	23,017,822

See accompanying notes to unaudited consolidated financial statements.

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

	For the Nine Months Ended September 30,	
	2016	2015
	(In thousands)	
Cash flows from operating activities:		
Net loss	\$ (6,281)	\$ (8,055)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	7,298	7,422
Stock-compensation expense	4,277	4,175
Settlement of asset retirement obligation	—	(14)
Postponed financing costs	656	—
Changes in operating assets and liabilities:		
Accounts receivable	999	(5,425)
Inventories	(6,370)	(1,732)
Prepaid expenses and other assets	189	(1,001)
Accounts payable	(17)	1,504
Accrued expenses	(2,189)	(1,123)
Deferred revenue	72	4,167
Net cash used in operating activities	<u>(1,366)</u>	<u>(82)</u>
Cash flows from investing activities:		
Capital expenditures	(9,994)	(19,377)
Purchases of marketable securities	—	(2,500)
Maturity and sale of marketable securities	—	2,500
Net cash used in investing activities	<u>(9,994)</u>	<u>(19,377)</u>
Cash flows from financing activities:		
Repayment of obligations under capital lease	(55)	(58)
Payments made for employee restricted stock tax withholdings	(196)	(238)
Payment of deferred financing costs	(64)	—
Net cash used in financing activities	<u>(315)</u>	<u>(296)</u>
Net decrease in cash	(11,675)	(19,755)
Cash at beginning of period	32,804	49,719
Cash at end of period	<u>\$ 21,129</u>	<u>\$ 29,964</u>
Supplemental disclosures of cash flow information:		
Interest paid	\$ 153	\$ 149
Income taxes paid	\$ —	\$ —
Supplemental disclosures of non-cash activities:		
Changes in accrued capital expenditures	\$ 602	\$ (6,112)
Changes in building lease incentives	\$ 268	\$ —
Advanced billings	\$ —	\$ 1,142
Unpaid financing costs	\$ (592)	\$ —
Capitalized leases	\$ —	\$ 21
Settlement of asset retirement obligation	\$ 241	\$ —

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, which was formed in August 2016.

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, 2015 (the Annual Report), filed with the Securities and Exchange Commission on March 4, 2016.

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 September 30, 2016 and the results of its operations for the three and nine months ended September 30, 2016 and 2015 and the cash flows for the nine months then ended. The Company has evaluated events through the date of this filing.

The results of operations for the three and nine months ended September 30, 2016 are not necessarily indicative of the results to be expected for the year ending December 31, 2016 or any other period.

There have been no changes to the Company's significant accounting policies described in the Annual Report that have had a material impact on the Company's consolidated financial statements and notes thereto.

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.

(2) Significant Accounting Policies

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 is believed to be reasonable under the circumstances. Management adjusts such estimates and assumptions when facts and circumstances dictate. Illiquid credit markets, volatile equity markets and declines in business investment 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.

Concentration of Credit Risk

For the three months ended September 30, 2016, three customers represented 32%, 13% and 10% of total revenue. For the three months ended September 30, 2015, three customers represented 13%, 12% and 11% of total revenue.

For the nine months ended September 30, 2016, two customers represented 20% and 14% of total revenue. For the nine months ended September 30, 2015, two customers represented 15% and 15% of total revenue.

At September 30, 2016, the Company had two customers that accounted for 30% and 15% of accounts receivable. At December 31, 2015, the Company had three customers that accounted for 17%, 14% and 13% of accounts receivable.

Revenue Recognition

The Company recognizes revenue from the sale of products and delivery of research and development services. Revenue is recognized when all of the following criteria are met: persuasive evidence of an arrangement exists, the price to the buyer is fixed or determinable, delivery has occurred or services have been provided, and collectability is reasonably assured.

Product Revenue

Product revenue is recognized upon transfer of title and risk of loss, which is upon shipment or delivery. The Company's customary shipping terms are free on board (FOB) shipping point.

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 products being delivered.

Research Services Revenue

The Company performs research services under contracts with various government agencies and other institutions. The Company records revenue earned on research services contracts 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 is the labor effort expended in completing research, and the only deliverable, other than the labor hours expended, is 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 towards 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 in the period they become known. To date, adjustments to revenue as a result of audit have been insignificant.

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 terms of the conditions, the expected volatility of the underlying security, and other relevant factors.

During the nine months ended September 30, 2016, the Company granted 75,152 shares of restricted common stock and non-qualified stock options (NSOs) to purchase 103,593 shares of common stock with a fair value of \$0.4 million and \$0.2 million, respectively, 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 nine months ended September 30, 2016, the Company granted 420,284 restricted common stock units (RSUs) and NSOs to purchase 259,469 shares of common stock to employees under the 2014 Equity Plan. The employee RSUs and NSOs will vest over a three year period. Stock-based compensation is included in cost of sales or operating expenses, as applicable, and consists of the following:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
	(In thousands)			
Cost of product revenue	\$ 241	\$ 241	\$ 632	\$ 647
Research and development expenses	184	181	472	544

Sales and marketing expenses	314	288	852	774
General and administrative expenses	<u>735</u>	<u>766</u>	<u>2,321</u>	<u>2,210</u>
Total stock-based compensation	<u>\$ 1,474</u>	<u>\$ 1,476</u>	<u>\$4,277</u>	<u>\$4,175</u>

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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 463,697 shares to 6,069,201 shares effective January 1, 2016.

As of September 30, 2016, 2,628,813 shares of common stock were reserved for issuance upon the exercise or vesting, as appropriate, of outstanding stock-based awards granted under the 2014 Equity Plan. In addition, as of September 30, 2016, 93,014 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 September 30, 2016, there were 2,845,219 shares of common stock available for grant under the 2014 Equity Plan.

Earnings 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, RSUs and warrants. 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 September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
	(In thousands)			
Revenue:				
U.S.	\$ 6,850	\$12,088	\$28,471	\$33,810
International	22,710	19,451	61,628	51,324
Total	<u>\$29,560</u>	<u>\$31,539</u>	<u>\$90,099</u>	<u>\$85,134</u>

Warranty Costs

The Company provides warranties for its products and records the estimated cost within cost of sales in the period that the related revenue is recorded. The Company’s standard warranty period extends to one year from the date of shipment. The standard warranties provide 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. Historically, warranty claims and charges have been insignificant.

The Company’s products may be utilized in systems that may involve new technical demands and new configurations. As such, the Company will continue to regularly review and assess whether warranty reserves shall be recorded in the period the related revenue is recorded. For initial shipments of products 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.

During the nine months ended September 30, 2016, the Company recorded warranty expense of \$0.5 million. This specific reserve was principally related to product warranty claims for a specific project. These claims were outside of the Company’s typical experience. As of September 30, 2016, the Company had satisfied all outstanding warranty claims.

Additionally, during the nine months ended September 30, 2016, a customer notified the Company of a specific product application issue. The customer continues to request and receive shipment of additional aerogel product and no claim has been made. The Company cannot be certain that it will not be subject to a warranty claim.

Recently Issued Accounting Standards

In August 2016, the Financial Accounting Standards Board (FASB) issued Accounting Standards Update (ASU) No. 2016-15, Statement of Cash Flows (Topic 230): Classification of Certain Cash Receipts and Cash Payments (ASU 2016-15). This amendment addresses eight classification issues related to the statement of cash flows. For public business entities, the amendments in ASU 2016-15 are effective for public business entities for annual and interim periods in fiscal years beginning after December 15, 2017. Early adoption is permitted, including adoption in an interim period. The Company has not yet selected a transition method and is evaluating the effect the updated standard will have on its consolidated financial statements and related disclosures.

In March 2016, the FASB issued ASU No. 2016-09, Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting (ASU 2016-09). The amendment is to simplify several aspects of the accounting for share-based payment transactions including the income tax consequences, classification of awards as either equity or liabilities, and classification on the statement of cash flows. For public entities, the amendments in ASU 2016-09 are effective for interim and annual reporting periods beginning after December 15, 2016. The Company does not expect adoption of this standard to have a material impact on its consolidated results of operations and financial condition.

In February 2016, the FASB issued ASU 2016-02, Leases (Topic 842) (FASB ASU 2016-02). FASB ASU 2016-02 changes the accounting for leases and includes a requirement to record all leases on the consolidated balance sheets as assets and liabilities. This update is effective for fiscal years beginning after December 15, 2018. Early application is permitted. The Company has not yet selected a transition method and is evaluating the effect the updated standard will have on its consolidated financial statements and related disclosures.

In August 2015, the FASB issued a deferral of ASU 2014-09, Revenue from Contracts with Customers. The standard will eliminate the transaction- and industry-specific revenue recognition guidance under current U.S. GAAP and replace it with a principle based approach for determining revenue recognition. As a result of the deferral, public entities are required to apply the revenue recognition standard for the annual reporting period beginning on or after December 15, 2017, including interim periods within that annual reporting period. Early application is not permitted. The Company has not yet selected a transition method and is evaluating the effect that the updated standard will have on its consolidated financial statements and related disclosures.

In July 2015, the FASB issued ASU 2015-11, Inventory (Topic 330), which, for entities that do not measure inventory using the last-in, first-out (LIFO) or retail inventory method, changes the measurement principle for inventory from the lower of cost or market to lower of cost and net realizable value. The ASU also eliminates the requirement for these entities to consider replacement cost or net realizable value less an approximately normal profit margin when measuring inventory. Public entities are required to apply the standards for fiscal years beginning after December 15, 2016, including interim periods within those fiscal periods. Early adoption is permitted as of the beginning of an interim or annual period. The Company does not expect adoption of this standard to have a material impact on its consolidated results of operations and financial condition.

(3) Inventories

Inventories consist of the following:

	September 30, 2016	December 31, 2015
	(In thousands)	
Raw materials	\$ 3,862	\$ 4,432
Finished goods	9,040	2,100
Total	<u>\$ 12,902</u>	<u>\$ 6,532</u>

(4) Property, Plant and Equipment, Net

Property, plant and equipment consist of the following:

	September 30, 2016	December 31, 2015	Useful life
	(In thousands)		
Construction in progress	\$ 10,830	\$ 5,138	—
Buildings	23,901	23,884	30 years
Machinery and equipment	109,156	104,658	3-10 years
Computer equipment and software	7,472	6,888	3 years
Total	151,359	140,568	
Accumulated depreciation	(69,454)	(62,246)	
Property, plant and equipment, net	\$ 81,905	\$ 78,322	

Depreciation expense was \$7.3 million and \$7.4 million for the nine months ended September 30, 2016 and 2015, respectively.

Construction in progress totaled \$10.8 million and \$5.1 million at September 30, 2016 and December 31, 2015, respectively, which included engineering designs and other pre-construction costs for the planned manufacturing facility in Statesboro, Georgia of \$6.3 million and \$2.3 million at September 30, 2016 and December 31, 2015, respectively.

(5) Accrued Expenses

Accrued expenses consist of the following:

	September 30, 2016	December 31, 2015
	(In thousands)	
Employee compensation	\$ 2,452	\$ 4,184
Other accrued expenses	1,693	1,384
Total	\$ 4,145	\$ 5,568

(6) Commitments and Contingencies

Customer Supply Agreement

On June 21, 2016, the Company entered into a supply agreement and a side agreement (together, the supply agreement) and a joint development agreement with BASF SE (BASF). Pursuant to the supply agreement, the Company will sell exclusively to BASF the Company's Spaceloft® A2 product at annual volumes to be specified by BASF, subject to certain volume limits. The supply agreement will terminate on December 31, 2027, if not renewed prior to such date. Upon expiration of the supply agreement, the Company will be subject to a post-termination supply commitment for an additional two years. The joint development agreement is designed to facilitate the collaboration between the parties on the development and commercialization of new products.

In addition, BASF will make a non-interest bearing prepayment to the Company in the aggregate amount of \$22 million during the construction of the planned manufacturing facility in Statesboro, Georgia (Plant Two), subject to the Company's prior satisfaction of certain preconditions related to the finalization of certain aspects of the product specification and the progress of the financing and construction of Plant Two, including securing a debt commitment from a third party lender for at least \$30 million. BASF is obligated to pay the prepayment to the Company in eight equal consecutive quarterly installments commencing on the later of (i) October 1, 2016 or (ii) the first day of the calendar quarter following the date on which the Plant Two progress preconditions are met. Once commenced, BASF's obligation to make such quarterly payments shall be subject to postponement in the event of delays of three months or more in the projected date of completion of Plant Two by a commensurate number of months.

After October 1, 2018, the Company will, at BASF's instruction, credit up to 25.3% of any amounts invoiced by the Company for Spaceloft® A2 product sold to BASF against the prepayment balance. However, BASF has no obligation to purchase products under the supply agreement. If any of the prepayment remains uncredited against amounts invoiced by the Company as of September 30, 2023, BASF may request that the Company repay the uncredited amount to BASF in four equal quarterly installments beginning on December 31, 2023. The repayment obligation will be secured by a security interest in real estate, plant and equipment at the Company's Rhode Island and Georgia manufacturing facilities.

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As of September 30, 2016, the Company anticipates that the general uncertainty in the energy markets and recent weakness in the downstream markets will continue into 2017. With this view of the market, the Company had elected to temporarily delay the board approved Plant Two project and its related financing to better align the capacity expansion with the Company's assessment of demand for the 2018 to 2020 period. As a result, the Company has yet to fulfill certain of the prepayment preconditions and commencement of the quarterly prepayments from BASF will be delayed until such preconditions are satisfied.

Financing Costs

During the nine months ended September 30, 2016, the Company engaged with a third party lender to secure a debt commitment to support the construction of Plant Two. During the three months ended September 2016, the Company decided, at its sole discretion, to temporarily delay both the Plant Two project and its related financing to better align the capacity expansion with the Company's assessment of demand for the 2018 to 2020 period. In addition, the Company anticipates that debt commitments from third party lenders will be postponed for a period of at least six months. As a result, the Company recorded a \$0.6 million charge included in other expense, net for postponed financing costs. The charge included legal fees incurred by the Company itself and on behalf of the potential lender.

Asset Retirement Obligation

As of December 31, 2015, the Company had asset retirement obligations (ARO) arising from requirements to perform certain asset retirement activities upon the termination of its Northborough, Massachusetts facility lease and upon disposal of certain machinery and equipment.

During the nine months ended September 30, 2016, the Company incurred approximately \$0.2 million in expenditures in support of completing the restoration of 31,577 square feet of space formerly utilized for manufacturing operations in the Northborough, Massachusetts facility. This manufacturing space was vacated and returned to the landlord on July 1, 2016.

On June 29, 2016, the Company executed an agreement to remain at the Northborough, Massachusetts facility through December 31, 2026. As part of the new agreement, the Company's obligation to restore the remaining space in the Northborough facility was eliminated. The settlement of the remaining reserve balance of approximately \$0.2 million was reclassified to accrued expenses and will be amortized as a reduction to rent expense over the term of the new lease agreement.

	Nine Months Ended September 30, 2016
	(In thousands)
Balance at beginning of period	\$ 397
Expenditures	(156)
Settlement of asset retirement obligation	(241)
Balance at end of period	<u>\$ —</u>

Revolving Line of Credit

The Company maintains a revolving credit facility with Silicon Valley Bank. On August 19, 2016, the Company amended the Amended and Restated Loan and Security Agreement with Silicon Valley Bank, which was originally effective from August 31, 2014 to August 31, 2016 (the Credit Facility), pursuant to which, the Credit Facility's maturity date was extended to November 29, 2016. The Company may borrow up to \$20 million under the facility subject to compliance with certain covenants and borrowing base limitations. 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 1.75% 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. The revolving credit facility is secured by a first priority security interest in all assets of the Company, including those at the East Providence facility, except for certain exclusions.

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At both September 30, 2016 and December 31, 2015, the Company had no amounts drawn on the revolving credit facility. Under the revolving credit facility, the Company is required to comply with financial covenants relating to, among other items, minimum Adjusted EBITDA, maximum unfinanced capital expenditures and other non-financial covenants. At September 30, 2016, the Company was in compliance with all such financial covenants.

Pursuant to the terms of its existing Northborough, Massachusetts facility lease, the Company has been required to provide the landlord with letters of credit securing certain obligations. In addition, the Company has been required to provide certain customers with letters of credit securing obligations under commercial contracts. The Company had outstanding letters of credit backed by the revolving credit facility of \$2.5 million and \$2.7 million September 30, 2016 and December 31, 2015, respectively, which reduce the funds otherwise available to the Company under the revolving credit facility. Based on the available borrowing base and net of the \$2.5 million of outstanding letters of credit, the amount available to the Company under the revolving credit facility at September 30, 2016 was \$12.5 million.

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.

Operating Leases

On June 29, 2016, the Company entered into a new agreement with Cabot II- MA1M03, LLC (Cabot Properties) to lease approximately 51,650 square feet of office space in Northborough, MA, the location of the Company’s current headquarters. The new lease follows the existing lease between the Company and Cabot Properties that expires on December 31, 2016. The lease term will commence on January 1, 2017 and expire on December 31, 2026. The annual base rent associated with the lease will be approximately \$408,000 during the first year of the lease, and increase by approximately 3% annually for the term of the lease. The lease also provides for the payment by the Company of its pro rata share of real estate taxes and certain other expenses. Prior to the expiration of the lease term, the Company will have the right to extend the lease for an additional term of three years.

Under the terms of the new lease, Cabot Properties will provide the Company with an allowance of up to \$1.2 million to be utilized for improvements to the leased premises. The Company will account for the reimbursements from Cabot Properties for such improvements as a lease obligation incentive. In addition, the new lease eliminated the Company’s asset retirement obligations under the existing lease. The settlement of the remaining asset retirement reserve balance of approximately \$0.2 million was reclassified to other liabilities. These amounts will be recorded as a component of deferred rent in determining the minimum lease payments for the property. As of September 30, 2016, the Company had capitalized \$0.4 million in leasehold improvement costs.

(7) Net Loss Per Share

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

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
(In thousands, except share and per share data)				
Numerator:				
Net loss	\$ (3,097)	\$ (2,522)	\$ (6,281)	\$ (8,055)
Denominator:				
Weighted average shares outstanding, basic and diluted	23,168,251	23,060,456	23,114,280	23,017,822
Net loss per share, basic and diluted	\$ (0.13)	\$ (0.11)	\$ (0.27)	\$ (0.35)

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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 September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
Common stock options	2,044,840	1,224,279	2,044,840	1,224,279
Restricted common stock units	677,001	405,463	677,001	405,463
Common stock warrants	115	131	115	131
Restricted common stock awards	153,277	54,005	153,277	54,005
Total	<u>2,875,233</u>	<u>1,683,878</u>	<u>2,875,233</u>	<u>1,683,878</u>

In the table above, anti-dilutive shares consist of those common stock equivalents that have (i) an exercise price that exceeds 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.

(8) Income Taxes

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

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, 2015, filed with the Securities and Exchange Commission on March 4, 2016, 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. 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, 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, including those risks identified under Part II, Item 1A of 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 Information” and our financial statements and related notes included 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, reduce energy use, preserve operating assets and protect workers.

Our insulation is used by oil producers and the owners and operators of refineries, petrochemical plants, LNG 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 aerogels 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 30 countries around the world that ensures 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 process and technology at our facility in East Providence, Rhode Island. We completed the construction and start-up of a third production line in the East Providence facility during the first quarter of 2015 with a total construction cost of \$31.8 million. The third production line increased our annual nameplate capacity to 50 million to 55 million square feet of aerogel blankets, depending on product mix.

On February 15, 2016, we entered into an Inducement Agreement with the Development Authority of Bulloch County, the City of Statesboro, Georgia and Bulloch County, Georgia (collectively, the Statesboro Entities). Pursuant to the Inducement Agreement, the Statesboro Entities will provide various incentives to induce us to invest \$70 million in constructing and equipping our planned second manufacturing facility in Statesboro, Georgia and to create 106 full-time jobs. We will also receive statutory incentives for economic development provided by the State of Georgia.

Incentives provided by the Statesboro Entities will include property tax reductions and utility and site infrastructure improvements. The Development Authority will lease to us a 43.2 acre property for a term of five years, with an option to renew, in consideration for the payment of nominal rent, and grant us an option to purchase the property upon the earlier of the expiration or termination of the lease at a nominal price.

In addition, we entered into a (i) PILOT Agreement with the Statesboro Entities that sets forth our rights and obligations with respect to the incentives received pursuant to the Inducement Agreement and (ii) a Performance and Accountability Agreement with other state authorities, which provides for a grant of \$250,000. Pursuant to these agreements, in the event that we fail to meet at least 80% of the investment and job creation goals within 36 months following the earlier to occur of (i) the completion and issuance of the certificate of occupancy with respect to the planned second manufacturing facility or (ii) June 30, 2018, we may be required to repay portions of property tax savings and other incentives. In addition, we must maintain our achievement of 80% of the investment and job creation goals for a period of 84 months.

On June 21, 2016, we entered into a supply agreement and a side agreement (together, the supply agreement) and a joint development agreement with BASF SE (BASF). Pursuant to the supply agreement, we will sell exclusively to BASF our Spaceloft® A2 product at annual volumes to be specified by BASF, subject to certain volume limits. The supply agreement will terminate on December 31, 2027, if not renewed prior to such date. Upon expiration of the supply agreement, we will be subject to a post-termination supply commitment for an additional two years. The joint development agreement is designed to facilitate the collaboration between the parties on the development and commercialization of new products.

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In addition, BASF will make a non-interest bearing prepayment to us in the aggregate amount of \$22 million during the construction of the planned manufacturing facility in Statesboro, Georgia (Plant Two), subject to our prior satisfaction of certain preconditions related to the finalization of certain aspects of the product specification and the progress of the financing and construction of Plant Two, including securing a debt commitment from a third party lender for at least \$30 million. BASF will pay the prepayment to us in eight equal consecutive quarterly installments commencing on the later of (i) October 1, 2016 or (ii) the first day of the calendar quarter following the date on which the Plant Two progress preconditions are met. Once commenced, BASF's obligation to make such quarterly payments will be subject to postponement in the event of delays of three months or more in the projected date of completion of Plant Two by a commensurate number of months. BASF will also provide technical support targeting manufacturing productivity, product cost and profit margins.

In addition, prior to BASF paying any prepayment, we will be required to secure our obligation to repay the prepayments with a first priority security interest in all of our interest in real estate, machinery and equipment located at our existing manufacturing facility in East Providence, Rhode Island and that may, in the future, be located at Plant Two. Additionally, we will grant non-exclusive licenses to our subsidiaries under our intellectual property as necessary to operate such machinery and equipment.

After October 1, 2018, we will, at BASF's instruction, credit up to 25.3% of any amounts invoiced by us for Spaceloft® A2 product sold to BASF against the prepayment balance. However, BASF has no obligation to purchase products under the supply agreement. If any of the prepayment remains uncredited against amounts invoiced by us as of September 30, 2023, BASF may request that we repay the uncredited amount to BASF in four equal quarterly installments beginning on December 31, 2023.

We anticipate that the general uncertainty in the energy markets and recent weakness in the downstream markets will continue into 2017. With this view of the market, we elected to temporarily delay the board approved Plant Two project and its related financing to better align the capacity expansion with the Company's assessment of demand for the 2018 to 2020 period. As a result, we have yet to fulfill certain of the prepayment preconditions, and commencement of the quarterly prepayments from BASF will be delayed until such preconditions are satisfied.

Our revenue for the nine months ended September 30, 2016 was \$90.1 million, which represented an increase of \$5.0 million from the nine months ended September 30, 2015. Net loss for the nine months ended September 30, 2016 was \$6.3 million and net loss per diluted share was \$0.27. Net loss for the nine months ended September 30, 2015 was \$8.1 million and net loss per diluted share was \$0.35.

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 to be 50 million to 55 million square feet of aerogel blankets depending on product mix. We believe the square foot operating metric allows us and our investors to measure the growth in our manufacturing capacity and product shipments on a uniform and consistent basis. The following chart sets forth product shipments associated with recognized revenue in square feet for the periods presented:

	Three Months Ended September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
	(In thousands)			
Product shipments in square feet	11,843	10,450	33,632	30,380

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, which occur from time to time, that we do not believe are indicative of our core operating performance, which included, during the three and nine months ended September 30, 2016, postponed financing costs. 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, income from operations, net cash provided by 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 September 30,		Nine Months Ended September 30,	
	2016	2015	2016	2015
	(In thousands)			
Net loss	\$(3,097)	\$(2,522)	\$(6,281)	\$(8,055)
Depreciation and amortization	2,472	2,664	7,298	7,422
Stock-based compensation(1)	1,474	1,476	4,277	4,175
Interest expense	37	46	115	136
Postponed financing costs	656	—	656	—
Adjusted EBITDA	<u>\$ 1,542</u>	<u>\$ 1,664</u>	<u>\$ 6,065</u>	<u>\$ 3,678</u>

- (1) Represents non-cash stock-based compensation related to vesting and modifications of stock option grants, vesting of RSUs 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, average material costs, our actual manufacturing costs, the costs associated with and timing of expansions and start-up of additional production capacity, and the amount and timing of operating expenses. As we build out our manufacturing capacity in the longer term, we expect increased manufacturing expenses will periodically have a negative impact on net income (loss), earnings per share and Adjusted EBITDA, but will set the framework for improved performance in the long term. Accordingly, we expect that our net income (loss), earnings per share and Adjusted EBITDA will vary from period to period, in particular as and when we expand our manufacturing capacity. In the near term, as a result of protracted low energy prices and an increase in uncertainty around the spending and future development plans of the end users of our products, we believe that we could see a decrease in revenue and an associated decrease in net income, earnings per share and Adjusted EBITDA. Given fixed cost structures and lag times for implementing reductions of certain variable costs, the percentage decrease in net income, earnings per share and Adjusted EBITDA could be significantly greater than any percentage decrease in revenue.

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 revenue is recognized upon transfer of title and risk of loss, which is upon shipment or delivery.

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 products being delivered.

Cost of Revenue

Cost of revenue for our product revenue consists primarily of materials and manufacturing expense, including direct labor, utilities, maintenance expense and depreciation on manufacturing assets. Cost of product revenue is recorded when the related product revenue is recognized. Cost of product revenue also includes stock-based compensation of manufacturing employees and shipping costs.

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, blanket thicknesses and manufacturing yields. In addition, we provide warranties for our products and record the estimated cost within cost of sales in the period that the related revenue is recorded. As a result, material costs as a percentage of revenue will vary from period to period due to changes in the mix of aerogel products sold or the estimated cost of warranties. However, in general, we expect material costs in the aggregate to decline as a percentage of revenue as we seek to achieve higher selling prices, material sourcing improvements, quality improvements and manufacturing yield enhancements for our aerogel products.

Manufacturing expense is also a significant component of cost of revenue. As we increase manufacturing capacity through our planned construction and operation of a second manufacturing facility and, over time, potentially expand the production lines at this facility, we expect manufacturing expense as a percentage of product revenue will increase following each expansion but will decrease in the long-term with increased revenues supported by the effect of completed capacity expansions. In the near term, as a result of protracted low energy prices and an increase in uncertainty around the spending and future development plans of the end users of our products, we believe that we could see a decrease in revenue and an associated increase in manufacturing expense as a percentage of revenue.

Cost of revenue for our research services revenue consists of direct labor costs of research personnel engaged in the contract research, third-party consulting expense, and associated direct material costs. This cost of revenue also includes overhead expenses associated with project resources, development tools and supplies. Cost of revenue for our 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, average material costs, our actual 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. As and when we build out our manufacturing capacity, we expect increased manufacturing expenses will periodically have a significant negative impact on gross profit in the periods following any such expansion. In the near term, as a result of protracted low energy prices and an increase in uncertainty around the spending and future development plans of the end users of our products, we believe that we could see a decrease in revenue and an associated decrease in gross profit as a percentage of revenue. However, in general, we expect gross profit to improve as a percentage of revenue in the longer term due to expected increases in manufacturing productivity and production volumes, supported by expected capacity expansions, improvements in manufacturing yields 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.

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 technology. 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, in the nearer term such expenses may increase as a percentage of revenue.

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 plan to expand our sales force and sales consultants globally to drive anticipated growth in customers and demand for our products. While we expect that sales and marketing expenses will increase in absolute dollars but decrease as a percentage of revenue in the longer-term, in the nearer term such expenses may increase as a percentage of revenue.

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, 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 and continued expansion of our manufacturing operations. 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, will result in a near-term increase in legal expense and, if such litigation is protracted, could result in significant additional legal expense over the medium to long-term. In the longer term, we expect that general and administrative expenses will increase in absolute dollars but decrease as a percentage of revenue.

Other Expense, Net

For the three and nine months ended September 30, 2016, other expense, net consisted primarily of postponed financing costs, as well as costs related to our revolving credit facility. For the three and nine months ended September 30, 2015, other expense, net consisted primarily of costs related to our revolving credit facility.

During the nine months ended September 30, 2016, we engaged a third party lender to secure a debt commitment to support the construction of Plant Two. During the three months ended September 2016, we decided, at our sole discretion, to temporarily delay both the Plant Two project and its related financing to better align the capacity expansion with our assessment of demand for the 2018 to 2020 period. As a result, we recorded a \$0.6 million charge for postponed financing costs.

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 September 30, 2016 compared to the three months ended September 30, 2015

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

Revenue

	Three Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
(\$ in thousands)						
Revenue:						
Product	\$28,877	98%	\$30,926	98%	\$(2,049)	(7)%
Research services	683	2%	613	2%	70	11%
Total revenue	<u>\$29,560</u>	100%	<u>\$31,539</u>	100%	<u>\$(1,979)</u>	(6)%

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

	Three Months Ended September 30,		Change	
	2016	2015	Amount	Percentage
Product shipments in square feet (in thousands)	11,843	10,450	1,393	13%

Total revenue decreased \$2.0 million, or 6%, to \$29.6 million for the three months ended September 30, 2016 from \$31.5 million in the comparable period in 2015 primarily as a result of a decrease in product revenue.

Product revenue decreased by \$2.0 million, or 7%, to \$28.9 million for the three months ended September 30, 2016 from \$30.9 million in the comparable period in 2015. This decrease was principally the result of a decrease in sales of our aerogel products to the subsea market and in the North American and European energy markets, offset, in part, by increased revenue in the Asian energy market.

Product revenue for the three months ended September 30, 2016 included \$9.3 million to a major Asian energy company and \$3.8 million to an Asian distributor. Product revenue for the three months ended September 30, 2015 included \$4.0 million to a North American distributor, \$3.7 million to a major Asian energy company and \$3.4 million to a subsea contractor.

The average selling price per square foot of our products decreased by \$0.52, or 18%, to \$2.44 per square foot for the three months ended September 30, 2016 from \$2.96 per square foot for the three months ended September 30, 2015. The decrease in average selling price reflected a year-over-year decline in the mix of high-priced subsea products, combined with an increase in the mix of products sold to the major Asian energy company with project-based pricing. This decrease in average selling price had the effect of decreasing product revenue by \$6.1 million for the three months ended September 30, 2016 from the comparable period in 2015.

In volume terms, product shipments increased by 1.4 million square feet, or 13%, to 11.8 million square feet of aerogel products for the three months ended September 30, 2016, as compared to 10.5 million square feet for the three months ended September 30, 2015. The increase in product volume had the effect of increasing product revenue by \$4.1 million for the three months ended September 30, 2016 from the comparable period in 2015.

Research services revenue increased \$0.1 million, or 11%, to \$0.7 million for the three months ended September 30, 2016 from \$0.6 million in the comparable period in 2015. The increase was primarily due to the timing and amount of funding available under existing research contracts during the three months ended September 30, 2016 from the comparable period in 2015.

Product revenue was 98% of total revenue for the three months ended September 30, 2016 and 2015. Research services revenue was 2% of total revenue for the three months ended September 30, 2016 and 2015.

Cost of Revenue

	Three Months Ended September 30,						Change	
	2016			2015				
	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	\$22,790	79%	77%	\$26,017	84%	82%	\$(3,227)	(12)%
Research services	368	54%	1%	350	57%	1%	18	5%
Total cost of revenue	<u>\$23,158</u>	78%	78%	<u>\$26,367</u>	84%	84%	<u>\$(3,209)</u>	(12)%

Total cost of revenue decreased \$3.2 million, or 12%, to \$23.2 million for the three months ended September 30, 2016 from \$26.4 million in the comparable period in 2015. The decrease in total cost of revenue was the result of a decrease of \$2.7 million in material costs, and a decrease of \$0.5 million in manufacturing expense while cost of research services remained generally unchanged.

Product cost of revenue decreased \$3.2 million, or 12%, to \$22.8 million for the three months ended September 30, 2016 from \$26.0 million in the comparable period in 2015. The \$3.2 million decrease was the result of a \$2.7 million decrease in material costs, and a \$0.5 million decrease in manufacturing expense year over year. The decrease in material costs was principally driven by an improvement in manufacturing yields and a shift in mix to lower cost products in the three months ended September 30, 2016 versus the comparable period in 2015. The decrease in manufacturing expense was the result of a decrease in depreciation expense of \$0.2 million, a decrease in operating supplies of \$0.1 million and a decrease in all other manufacturing expense of \$0.2 million.

Product cost of revenue as a percentage of product revenue decreased to 79% during the three months ended September 30, 2016 from 84% during the three months ended September 30, 2015 due principally to increased capacity utilization, enhanced manufacturing productivity, and improved product manufacturing yields.

Research services cost of revenue remained generally unchanged at \$0.4 million for the three months ended September 30, 2016 and 2015. During the three months ended September 30, 2016, the Company utilized a slightly higher mix of outside services versus internal labor to support the contracted research versus the comparable period in 2015.

Gross Profit

	Three Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
(\$ in thousands)						
Gross profit	\$ 6,402	22%	\$ 5,172	16%	\$ 1,230	24%

Gross profit increased \$1.2 million, or 24%, to \$6.4 million for the three months ended September 30, 2016 from \$5.2 million in the comparable period in 2015. This \$1.2 million increase in gross profit reflected the \$2.7 million decrease in material costs associated with improved product manufacturing yields and the shift to lower cost products, combined with the \$0.5 million decrease in manufacturing expense, offset, in part, by the \$2.0 million reduction in total revenue.

Gross profit as a percentage of total revenue increased to 22% of total revenue for the three months ended September 30, 2016 from 16% in the comparable period in 2015.

Research and Development Expenses

	Three Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	(\$ in thousands)					
Research and development expenses	\$ 1,328	4%	\$ 1,146	4%	\$ 182	16%

Research and development expenses increased \$0.2 million, or 16%, to \$1.3 million for the three months ended September 30, 2016 from \$1.1 million in the comparable period in 2015. The \$0.2 million increase was primarily due to an increase of \$0.1 million in payroll related costs and an increase of \$0.1 million in professional services.

Research and development expenses as a percentage of total revenue remained unchanged at 4% for the three months ended September 30, 2016 and 2015.

In the long-term, we expect to increase investment in research, development and engineering personnel, projects and infrastructure in support of efforts to develop new products, technologies and markets. However, we expect that research and development expenses will decline as a percentage of total revenue in the long-term due to projected growth in product revenue.

Sales and Marketing Expenses

	Three Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	(\$ in thousands)					
Sales and marketing expenses	\$ 3,056	10%	\$ 2,793	9%	\$ 263	9%

Sales and marketing expenses increased \$0.3 million, or 9%, to \$3.1 million for the three months ended September 30, 2016 from \$2.8 million in the comparable period in 2015. The \$0.3 million increase was primarily due to an increase of \$0.3 million in professional fees.

Sales and marketing expenses as a percentage of total revenue increased to 10% for the three months ended September 30, 2016 from 9% in the comparable period in 2015 due principally to the increase in professional fees and decline in total revenue during the three months ended September 30, 2016.

In the long-term, we plan to continue to expand our sales force to support anticipated growth in customers and demand for our products. However, we expect that sales and marketing expenses will decrease as a percentage of total revenue in the long-term due to projected growth in product revenue.

General and Administrative Expenses

	Three Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	(\$ in thousands)					
General and administrative expenses	\$ 4,422	15%	\$ 3,709	12%	\$ 713	19%

General and administrative expenses increased \$0.7 million, or 19% to \$4.4 million during the three months ended September 30, 2016 from \$3.7 million in the comparable period in 2015. The \$0.7 million increase was primarily the result of an increase of \$0.9 million in legal fees and expenses related to our patent enforcement actions, offset, in part, by a decrease in payroll related expenditures of \$0.2 million.

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General and administrative expenses as a percentage of total revenue increased to 15% for the three months ended September 30, 2016 from 12% in the comparable period in 2015. This increase was due to the combination of the increase in general and administrative expenses and the decline in total revenue during the three months ended September 30, 2016.

We expect to continue to increase general and administrative personnel and expense levels in the long term to support the anticipated growth of our business and continued expansion of our manufacturing operations. 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, will result in a near term increase in legal expense and, if such actions are protracted, could result in significant additional legal expense over the medium to long term. In the longer term, we expect that general and administrative expenses will increase in absolute dollars but decrease as a percentage of revenue.

Other Expense, net

	Three Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
(\$ in thousands)						
Other expense, net						
Interest expense, net	\$ (37)	(0)%	\$ (46)	(0)%	\$ 9	(20)%
Postponed financing costs	(656)	(2)%	—	0%	(656)	NM
Total other expense, net	<u>\$ (693)</u>	<u>(2)%</u>	<u>\$ (46)</u>	<u>(0)%</u>	<u>\$ (647)</u>	<u>1,407%</u>

Other expense, net increased \$0.6 million to \$0.7 million during the three months ended September 30, 2016 from less than \$0.1 million during the three months ended September 30, 2015. The \$0.6 million increase was primarily the result of a \$0.6 million charge relating to postponed financing costs. Other expense, net, during the three months ended September 30, 2015 was comprised primarily of costs related to our revolving credit facility.

Nine months ended September 30, 2016 compared to the nine months ended September 30, 2015

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

Revenue

	Nine Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
(\$ in thousands)						
Revenue:						
Product	\$88,286	98%	\$83,891	99%	\$ 4,395	5%
Research services	1,813	2%	1,243	1%	570	46%
Total Revenue	<u>\$90,099</u>	<u>100%</u>	<u>\$85,134</u>	<u>100%</u>	<u>\$ 4,965</u>	<u>6%</u>

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

	Nine Months Ended September 30,		Change	
	2016	2015	Amount	Percentage
Product shipments in square feet (in thousands)	33,632	30,380	3,252	11%

Total revenue increased \$5.0 million, or 6%, to \$90.1 million for the nine months ended September 30, 2016 from \$85.1 million in the comparable period in 2015 due to a \$4.4 million increase in product revenue and a \$0.6 million increase in research services revenue.

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Product revenue increased by \$4.4 million, or 5%, to \$88.3 million for the nine months ended September 30, 2016 from \$83.9 million in the comparable period in 2015. This increase was principally the result of an increase in sales of our aerogel products in the Asian energy market and the building materials market, offset, in part, by declines in the subsea market and the North American and European energy markets. The increase in product revenue during the nine months ended September 30, 2016 also reflects price increases enacted in late 2015 and was supported by the increase in manufacturing capacity associated with operation of the third production line in the East Providence facility which began operation at the end of the first quarter in 2015.

Product revenue for the nine months ended September 30, 2016 included \$17.8 million to a major Asian energy company and \$12.6 million to a distributor in the North American energy market. Product revenue for the nine months ended September 30, 2015 included \$12.6 million to a distributor in the North American energy market and \$12.4 million to a major Asian energy company.

The average selling price per square foot of our products decreased by \$0.13, or 5%, to \$2.63 per square foot for the nine months ended September 30, 2016 from \$2.76 per square foot for the nine months ended September 30, 2015. This decrease in average selling price caused a \$4.5 million decrease in product revenue during the nine months ended September 30, 2016. The decrease in average selling price reflected a year-over-year decline in the mix of high-priced subsea products, combined with an increase in the mix of products sold to a major Asian energy company with project-based pricing.

In volume terms, product shipments increased 3.3 million square feet, or 11%, to 33.6 million square feet of aerogel products for the nine months ended September 30, 2016 as compared to 30.4 million square feet for the nine months ended September 30, 2015. The increase in product volume contributed approximately \$8.9 million to the increase in product revenue during the nine months ended September 30, 2016.

Research services revenue increased \$0.6 million, or 46%, to \$1.8 million for the nine months ended September 30, 2016 from \$1.2 million in the comparable period in 2015. The increase was primarily due to the timing and amount of funding available under existing research contracts during the nine months ended September 30, 2016 versus the comparable period in 2015.

Product revenue was 98% and 99% of total revenue for the nine months ended September 30, 2016 and 2015, respectively. Research services revenue was 2% and 1% of total revenue for the nine months ended September 30, 2016 and 2015, respectively. We expect that product revenue will continue to constitute the vast majority of total revenue generated during 2016.

Cost of Revenue

	Nine Months Ended September 30,						Change	
	2016			2015				
	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	\$69,505	79%	77%	\$69,676	83%	82%	\$ (171)	(0)%
Research services	1,012	56%	1%	663	53%	1%	349	53%
Total cost of revenue	<u>\$70,517</u>	78%	78%	<u>\$70,339</u>	83%	83%	<u>\$ 178</u>	0%

Total cost of revenue increased \$0.2 million to \$70.5 million for the nine months ended September 30, 2016 from \$70.3 million in the comparable period in 2015. The increase in total cost of revenue was the result of an increase of \$2.1 million in manufacturing expense and an increase of \$0.3 million in cost of research services offset by a decrease of \$2.2 million in material costs.

Product cost of revenue decreased \$0.2 million to \$69.5 million for the nine months ended September 30, 2016 from \$69.7 million in the comparable period in 2015. The decrease was the result of a \$2.2 million decrease in material costs, offset, in large part, by a \$2.1 million increase in manufacturing costs. Despite year over year growth in product volume of 11% during the nine months ended September 30, 2016, material costs declined due to an improvement in manufacturing yields and a shift in mix to lower cost products versus the comparable period in 2015. The \$2.1 million increase in manufacturing expense included increases in compensation expense of \$0.9 million, maintenance and operating supplies expenses of \$1.0 million and utility costs of \$0.2 million. These increases were due to the operation of the third production line in the East Providence manufacturing facility which commenced operations late in March 2015.

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Product cost of revenue as a percentage of product revenue decreased to 79% during the nine months ended September 30, 2016 from 83% during the nine months ended September 30, 2015 due primarily to improvements in manufacturing productivity and yields.

Research services cost of revenue increased \$0.3 million, or 53%, to \$1.0 million for the nine months ended September 30, 2016 from \$0.7 million in the comparable period in 2015. The increase in cost of research services revenue was due to the 46% increase in research services revenue and increased utilization of outside consultants to support the contracted research during the nine months ended September 30, 2016.

Gross Profit

	Nine Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	(\$ in thousands)					
Gross profit	\$ 19,582	22%	\$ 14,795	17%	\$ 4,787	32%

Gross profit increased \$4.8 million, or 32%, to \$19.6 million for the nine months ended September 30, 2016 from \$14.8 million in the comparable period in 2015. This \$4.8 million increase was the result of the \$5.0 million increase in total revenue and the \$2.2 million decrease in material costs, offset, in part, by the \$2.1 million increase in manufacturing expense and \$0.3 increase in research services cost of revenue. The increase in revenue and manufacturing expense was driven primarily by operation of the third production line in the East Providence manufacturing facility, while the decrease in material costs was driven by improved manufacturing yields and a shift in mix to lower cost products during the nine months ended September 30, 2016.

Gross profit as a percentage of total revenue increased to 22% of total revenue for the nine months ended September 30, 2016 from 17% in the comparable period in 2015 due principally to improvements in manufacturing productivity and yields.

Research and Development Expenses

	Nine Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	(\$ in thousands)					
Research and development expenses	\$ 3,924	4%	\$ 4,001	5%	\$ (77)	(2)%

Research and development expenses decreased \$0.1 million, or 2%, to \$3.9 million, for the nine months ended September 30, 2016 from \$4.0 million in the comparable period in 2015. The \$0.1 million decrease was primarily due to decreases of \$0.2 million in compensation costs, offset by an increase of \$0.1 million in all other operating costs.

Research and development expenses as a percentage of total revenue decreased to 4% for the nine months ended September 30, 2016 from 5% in the comparable period in 2015 due to both the decrease in research and development expenses and the increase in total revenue during the nine months ended September 30, 2016.

In the long-term, we expect to increase investment in research, development and engineering personnel, projects and infrastructure in support of efforts to develop new products, technologies and markets. However, we expect that research and development expenses will decline as a percentage of total revenue in the long-term due to projected growth in product revenue.

Sales and Marketing Expenses

	Nine Months Ended September 30,				Change	
	2016		2015			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	(\$ in thousands)					
Sales and marketing expenses	\$ 8,939	10%	\$ 7,847	9%	\$ 1,092	14%

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Sales and marketing expenses increased \$1.1 million, or 14%, to \$8.9 million for the nine months ended September 30, 2016 from \$7.8 million in the comparable period in 2015. The \$1.1 million increase was primarily due to increases of \$0.5 million in compensation costs, \$0.3 million in professional expenses, \$0.2 million in travel expenses and \$0.1 million in marketing expenses.

Sales and marketing expenses as a percentage of total revenue increased to 10% for the nine months ended September 30, 2016 from 9% in the comparable period in 2015. This increase was the result of the 14% growth in sales and marketing expenses in relation to the 6% growth in total revenue during the nine months ended September 30, 2016.

In the long-term, we plan to continue to expand our sales force to support anticipated growth in customers and demand for our products. However, we expect that sales and marketing expenses will decrease as a percentage of total revenue in the long-term due to projected growth in product revenue.

General and Administrative Expenses

	Nine Months Ended September 30,				Change	
	2016		2015		Amount	Percentage
	Amount	Percentage of Revenue	Percentage	Percentage of Revenue		
	(\$ in thousands)					
General and administrative expenses	\$12,229	14%	\$ 10,866	13%	\$ 1,363	13%

General and administrative expenses increased \$1.4 million, or 13%, to \$12.2 million during the nine months ended September 30, 2016 from \$10.9 million in the comparable period in 2015. The \$1.4 million increase was primarily the result of a \$1.5 million increase in legal fees and expenses related to our patent enforcement actions, offset, in part, by a \$0.1 million decrease in compensation costs.

General and administrative expenses as a percentage of total revenue increased to 14% for the nine months ended September 30, 2016 from 13% in the comparable period in 2015 due principally to the increase in legal fees and expenses related to our patent enforcement action. We expect to continue to increase general and administrative personnel and expense levels in the long term to support the anticipated growth of our business and continued expansion of our manufacturing operations. 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, will result in a significant near term increase in legal expense.

Other Expense, net

	Nine Months Ended September 30,				Change	
	2016		2015		Amount	Percentage
	Amount	Percentage of Revenue	Amount	Percentage of Revenue		
	(\$ in thousands)					
Other expense, net						
Interest expense, net	\$ (115)	(0)%	\$ (136)	(0)%	\$ 21	15%
Postponed financing costs	(656)	(1)%	—	0%	(656)	NM
Total other expense, net	<u>\$ (771)</u>	<u>(1)%</u>	<u>\$ (136)</u>	<u>(0)%</u>	<u>\$ (635)</u>	<u>(467)%</u>

Other expense, net increased \$0.6 million to \$0.8 million during the nine months ended September 30, 2016 from \$0.1 million during the nine months ended September 30, 2015. The \$0.6 million increase was primarily the result of a \$0.6 million charge relating to postponed financing costs. Interest expense of \$0.1 million during the nine months ended September 30, 2015 was comprised primarily of costs related to our revolving credit facility.

Liquidity and Capital Resources

Overview

We have experienced significant losses and invested substantial resources since our inception to develop and commercialize 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.

We have been experiencing revenue growth as we gain share in our target markets. Despite an expected decline in revenue for the remainder of 2016 and into 2017, our financial forecast anticipates long-term revenue growth, with increasing levels of gross profit and improved cash flows from operations. However, we expect to incur significant capital expenditures through 2020 related to the expansion of our manufacturing capacity to support the expected growth in demand.

We believe that our existing cash balance and anticipated available credit will be sufficient to fund a portion of the design, development and construction of our second manufacturing facility. We expect to supplement our cash balance and available credit with anticipated cash flows from operations, local government grants, debt financings and potentially equity financings to provide the capital required to complete the first production line in our second manufacturing facility.

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 September 30, 2016, we had \$21.1 million of cash and cash equivalents.

At September 30, 2016, our debt obligations were limited to \$0.1 million related to capital lease obligations. At September 30, 2016, we also had \$2.5 million of outstanding letters of credit secured by our revolving credit facility with Silicon Valley Bank.

We maintain a revolving credit facility with Silicon Valley Bank since March 2011, which has been amended from time to time through 2016. On August 19, 2016, we amended the Amended and Restated Loan and Security Agreement with Silicon Valley Bank, which was originally effective from August 31 2014 to August 31, 2016, pursuant to which, the credit facility's maturity date was extended to November 29, 2016. We intend to negotiate a further extension of the facility prior to the current maturity date.

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 amended 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 1.75% 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.

Due to the borrowing base limitations of the revolving credit facility, the effective amount available to us under the facility at September 30, 2016 was \$12.5 million after giving effect to the \$2.5 million of letters of credit outstanding. As of September 30, 2016, we had no outstanding balances drawn on the revolving credit facility.

Analysis of Cash Flow

Net Cash Used in Operating Activities

During the nine months ended September 30, 2016, we used \$1.4 million in net cash from operating activities, as compared to \$0.1 million in net cash used during the comparable period in 2015, an increase in the use of cash of \$1.3 million. This increase was primarily the result of an increased use of cash from changes in operating assets and liabilities of \$3.7 million, offset, in part, by a decrease in cash from an improvement in net loss adjusted for non-cash items in the period of \$2.4 million. The increase in use of cash from changes in operating assets and liabilities is primarily related to an increase in finished goods inventories during the nine months ended September 30, 2016.

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 nine months ended September 30, 2016 and 2015 was \$10.0 million and \$19.4 million, respectively.

Net cash used in investing activities for the nine months ended September 30, 2016 included \$3.7 million in capital expenditures for engineering design and other pre-construction costs related to our planned manufacturing facility in Statesboro, Georgia, and \$6.3 million for machinery and equipment to improve the throughput and efficiency of our East Providence facility. Net cash used in investing activities for the nine months ended September 30, 2015 included \$19.4 million of capital expenditures primarily to construct the third production line in our East Providence manufacturing facility.

Net Cash Used in Financing Activities

Net cash used in financing activities for the nine months ended September 30, 2016 totaled \$0.3 million and consisted of \$0.2 million for payments made for employee tax withholdings associated with the vesting of restricted stock units, and a total of \$0.1 million related to postponed financing costs and for repayments of obligations under capital leases. Net cash used in financing activities for the nine months ended September 30, 2015 totaled \$0.3 million and included \$0.2 million for payments made for employee tax withholdings associated with the vesting of restricted stock units and \$0.1 million for repayments of obligations under capital leases.

Off Balance Sheet Arrangements

Since our 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

The following are the material changes to our contractual obligations and commitments as reported in our Annual Report on Form 10-K for the year ending December 31, 2015, filed with the SEC on March 4, 2016.

Operating Leases

On June 29, 2016, we entered into an Industrial Real Estate Lease, or the Lease, with Cabot II- MA1M03, LLC, or Cabot Properties to lease approximately 51,650 square feet of space located at 30 Forbes Road, Northborough, MA 01532, the location of our current headquarters. The Lease supersedes the Multi-Tenant Industrial Net Lease dated as of August 20, 2001, as amended, by and between us and TMT 290 Industrial Park, Inc., Cabot Properties' predecessor-in-interest. The term of the Lease begins on January 1, 2017 and ends on December 31, 2026. The annual base rent associated with the Lease will be approximately \$408,000 during the first year, increasing by approximately 3% annually for the term of the Lease, to be paid monthly. The Lease also provides for our payment of our pro rata share of real estate taxes and certain other expenses. Upon expiration of the Lease term, we will have the right to extend the Lease for an additional term of three years.

Supply Agreement

On June 21, 2016, we entered into a supply agreement and a side agreement (together, the supply agreement) with BASF SE, or BASF. Pursuant to the supply agreement, we will sell exclusively to BASF our Spaceloft® A2 product, or the Product, at annual volumes to be specified by BASF, subject to certain volume limits. Pricing shall be based on a cost-plus formula. The supply agreement also specifies the markets in which BASF will be permitted to sell Product. The supply agreement will terminate on December 31, 2027, if not renewed prior to such date. Upon expiration of the supply agreement, we will be subject to a post-termination supply commitment for an additional two years. In addition to the customary terms associated with supply agreements, in order to support our anticipated investment in Plant Two, BASF will make a non-interest bearing advance to us in the aggregate amount of \$22 million, or the Pre-Payment, during the construction of Plant Two, subject to our prior satisfaction of certain preconditions related to the finalization of certain aspects of the Product specification and the progress of the financing and construction of Plant Two, including securing a debt commitment from a third party lender for at least \$30 million. In addition, prior to BASF paying any Pre-Payment, we will be required to secure our obligation to repay the Pre-Payment with a first priority security interest in all of our interest in real estate, machinery and equipment located at our existing manufacturing facility in East Providence, Rhode Island and that may, in the future, be located at Plant Two. Additionally, we will grant non-exclusive licenses to our subsidiaries under our intellectual property as necessary to operate such machinery and equipment. BASF will pay the Pre-Payment to us in eight equal consecutive quarterly installments commencing on the later of (i) October 1, 2016 or (ii) the first day of the calendar quarter following the date on which the Plant Two progress preconditions are met. Once commenced, BASF's obligation to make such quarterly payments will be subject to postponement in the event of delays of three months or more in the projected date of completion of Plant Two by a commensurate number of months. After October 1, 2018, we will, at BASF's instruction, credit up to 25.3% of any amounts that we invoice for Product sold to BASF against the Pre-Payment. BASF has no obligation to purchase Product under the supply agreement. If any of the Pre-Payment remains uncredited against amounts that we invoice as described above as of September 30, 2023, BASF may request that we repay the unused amount to BASF in four equal quarterly installments beginning on December 31, 2023. Notwithstanding the foregoing, we may repay the Pre-Payment to BASF at any time in whole or in part for any reason. In the event of a sale of all or substantially all of our assets or a change of control of the Company, BASF may in certain instances have the right to terminate the supply agreement, in which case any uncredited amount of the Pre-Payment as of such sale or change of control will be due and payable to BASF within 30 days of the relevant transaction.

As of September 30, 2016, we anticipate that the general uncertainty in the energy markets and recent weakness in the downstream markets will continue into 2017. With this view of the market, we decided, at our sole discretion, to temporarily delay the board approved Plant Two project and its related financing to better align the capacity expansion with the our assessment of demand for the 2018 to 2020 period. As a result, we have yet to fulfill certain of the prepayment preconditions, and commencement of the quarterly prepayments from BASF will be delayed until such preconditions are satisfied.

Joint Development Agreement

Contemporaneous with the execution of supply agreement, we and BASF also entered into a Joint Development Agreement, or the JDA, setting forth the rights and obligations of us and BASF with respect to collaboration between the parties on the development and commercialization of new products. Under the JDA, each party may propose that the parties enter into joint efforts to seek to develop one or more products or services for commercialization on terms to be agreed by the parties. The JDA establishes a joint steering committee with equal representation from each of us and BASF to oversee any such collaboration. Unless otherwise agreed, all intellectual property created in the performance of joint development activities will generally be jointly owned by us and BASF. The JDA will have an initial term of two years with the option for the parties to renew at the expiration. Either party may terminate the JDA for any reason with 90-days prior notice to the other party, provided that such termination will not terminate any project under the JDA then in progress, with any such ongoing project able to be terminated by either party for any reason on 90-days prior notice to the other party.

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 on Form 10-K for the year ended December 31, 2015, filed on March 4, 2016 with the Securities and Exchange Commission, and note 2 to our unaudited 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 Securities and Exchange Commission, or 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 plans to construct a second manufacturing facility in Statesboro, Georgia; the estimated effects of our planned second manufacturing facility on our annual nameplate capacity; 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; our supply agreement with BASF, our exclusive supply to BASF of its Spaceloft® A2 product, the potential for future cash advances from BASF under the 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 construction of our proposed manufacturing plant expected to be located in Statesboro, Georgia, and the potential for BASF to become a significant customer for our products; our joint development agreement with BASF, the potential for it to support the development of new aerogel products and technologies, and the potential for it to assist our market diversification

and growth strategy; 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 beliefs about the outcome, effects or estimated costs of current or potential litigation or their respective timing, including expected legal expense in connection with the Company's patent enforcement actions; our expectations about hiring additional personnel; our plans to devote substantial resources to the development of new aerogel technology; our expectations about product mix; our beliefs about the impact of sales price increases; 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 near term revenue declines; our expectations of revenue growth, increased gross profit, and improving cash flows over the long term; 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 further extension of our revolving credit facility; 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 Part II, Item 1A of this Quarterly Report on Form 10-Q and under the heading “Risk Factors” contained in Item 1A of our Annual Report on Form 10-K for the year ended December 31, 2015.

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 September 30, 2016, we had unrestricted cash and cash equivalents of \$21.1 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 September 30, 2016, we have no debt outstanding other than capital lease obligations of approximately \$0.1 million with fixed interest rates. At September 30, 2016, we also had \$2.5 million of outstanding letters of credit.

In August 2016, we amended our loan and security agreement to extend the maturity date of the revolving credit facility to November 29, 2016. Under the 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 amended 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 1.75% 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.

Due to the borrowing base limitations, the effective amount available to us under the revolving credit facility at September 30, 2016 was \$12.5 million after giving effect to the \$2.5 million of letters of credit outstanding. As of September 30, 2016, we had no outstanding balances drawn on the revolving credit 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. Principally 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 and Exchange Act of 1934, as amended, or 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 September 30, 2016, 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 September 30, 2016, 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 three months ended September 30, 2016, 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.

On May 5, 2016, we filed a complaint for patent infringement against Nano Tech Co., Ltd. (“Nano”) and Guangdong Alison Hi-Tech., Ltd. (“Alison” and, together with Nano, the “Respondents”) in the United States International Trade Commission (the “ITC”). The ITC complaint alleges that these two China-based companies have engaged and are engaging in unfair trade practices by importing aerogel products in the United States that infringe several of the Company’s patents. In the ITC complaint, we are seeking exclusion orders directing United States Customs and Border Protection to stop the importation of infringing products. On June 2, 2016, the ITC instituted an investigation based on our complaint. The investigation is ongoing with participation from the Respondents through their respective counsel. In addition to Respondents’ contention at the ITC that the patents we have asserted are invalid, Alison has also filed petitions with United States Patent and Trademark Office requesting Inter-Partes Review to cancel certain claims in two of the asserted manufacturing process patents. Alison has also filed similar requests with the Chinese Patent Office to invalidate our manufacturing process patent and another unrelated patent in China.

On April 11, 2016, we also filed a patent infringement suit at the District Court in Mannheim, Germany against the Respondents and two European distributors. We have since settled with one European distributor in exchange for a commitment not to procure infringing products and cooperation with our case. The litigation against the other defendants is ongoing. In addition, Nano has initiated a nullity action in German Federal Patent Court against one of our manufacturing process patents in Germany.

Due to their nature, it is difficult to predict the outcome or the costs involved in any litigation. Furthermore, the Respondents may have significant resources and interest to litigate and therefore, this litigation 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.

Item 1A. Risk Factors.

The following are material changes to the risk factors included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2015.

Failure by us to develop, maintain and strengthen strategic relationships with industry leaders to commercialize our products, particularly in the building materials market, may adversely affect our results of operations and our ability to grow our business.

Our business strategy requires us to align the design and performance attributes of our products to the evolving needs of the market. To facilitate this process, we have sought out partnerships and relationships with industry leaders in order to assist in the development and commercialization of our products. We face competition from other manufacturers of insulation in seeking out and entering into such partnerships and relationships with industry leaders in our target markets and we may therefore not be successful in establishing strategic relationships in those markets.

In the building materials market, we have entered into a supply agreement and a side agreement (together, the supply agreement) and a joint development agreement with BASF SE (BASF). Pursuant to the supply agreement, we will sell exclusively to BASF our Spaceloft® A2 product at annual volumes to be specified by BASF, subject to certain volume limits. The joint development agreement is designed to facilitate the collaboration between the parties on the development and commercialization of new products.

In addition, under the supply agreement, BASF will make a non-interest bearing prepayment to us in the aggregate amount of \$22 million during the construction of the planned manufacturing facility in Statesboro, Georgia (Plant Two), subject to our prior satisfaction of certain preconditions related to the finalization of certain aspects of the product specification and the progress of the financing and construction of Plant Two. Once commenced, BASF’s obligation to make such quarterly payments will be subject to postponement in the event of delays of three months or more in the projected date of completion of Plant Two by a commensurate number of months. Prior to BASF paying any prepayment, we will be required to secure our obligation to repay the prepayments with a first priority security interest in all of our interest in real estate, machinery and equipment located at our existing manufacturing facility in East Providence, Rhode Island and that may, in the future, be located at Plant Two. Additionally, we will grant non-exclusive licenses to our subsidiaries under our intellectual property as necessary to operate such machinery and equipment and such license will be transferable to BASF should it take possession of such collateral. BASF has no obligation to purchase products under the supply agreement and BASF may require us to repay any amount of the prepayment that remains uncredited against amounts invoiced by us.

Although BASF has placed orders for product under the supply agreement, there can be no assurance that BASF will ever be a significant customer for our products. With respect to the prepayment by BASF, we may be unable to meet the conditions to which the prepayment by BASF is subject, including with respect to the progress of the financing and construction of our planned Plant Two,

which would eliminate one of our expected sources of financing for a portion of the construction of Plant Two. Furthermore, there can be no assurance that we or BASF will be able to perform under the supply agreement or the joint development agreement or achieve our or its respective goals with respect to the supply agreement, the joint development agreement or the broader relationship between us and BASF.

In the event that we are unable to develop products that meet market needs or maintain our relationship with BASF, we may be required to find less prominent partners in the building materials market and we may be less able or unable to successfully penetrate that market. As a result of any of the above, we may lessen or lose our ability to grow our business in the building materials market and to finance and construct our planned Plant Two, which could adversely affect our business, financial condition and results of operations, including impairing our profitability.

We have entered into and may enter into in the future agreements that may limit our ability to broadly market our products or could involve future obligations, which could make it more difficult for us to commercialize certain of our products and negatively affect our business and results of operations.

We have a joint development agreement with BASF to develop products in the building materials market. In order to develop and commercialize our products, we may enter into additional joint development agreements or commercial arrangements. We cannot be certain that any products will be successfully developed under any such agreement or, even if developed, that they will be successfully produced or commercialized. These agreements may contain exclusivity, ownership and other terms that may limit our ability to commercialize any products or technology developed in connection with such agreements, including in ways that we do not envision at the time of entering into the agreement. In addition, these agreements may not obligate either party to make any purchases and may contain technical specifications that must be achieved to the satisfaction of our partner, which we cannot be certain we will be able to achieve. If our ability to commercialize products or technology developed in connection with these agreements is limited or if we fail to achieve the technical specifications that may be required, then our business, financial condition and results of operations could be materially adversely affected.

Our inability to protect our intellectual property rights could negatively affect our business and results of operations.

Our ability to compete effectively depends in part upon developing, maintaining and/or protecting intellectual property rights relevant to our aerogel product forms, applications, manufacturing technologies and brand names. We rely principally on a combination of patent protection, trade secret laws, confidentiality and nondisclosure agreements, trademark registrations, common law rights and licensing arrangements to establish and protect the intellectual property rights relevant to our business. However, these measures may not be adequate in every given case to permit us to gain or keep any competitive advantage, particularly in those countries where the laws do not protect our proprietary rights as fully as or where the enforcement tools are weaker or less effective than those in the United States. In particular, since aerogels were developed approximately 80 years ago, there has been a wide range of research, development and publication related to aerogels, which makes it difficult to establish intellectual property rights to many key elements of aerogel technology and to obtain patent protection. Accordingly, much of the general technology that we use in our manufacture of aerogel blankets is not protected by patents.

Where we consider it appropriate, our strategy is to seek patent protection in the United States and other countries on technologies used in or relating to our aerogel product forms, applications and manufacturing technologies. As of September 30, 2016, we had 32 issued U.S. patents and 56 issued foreign patents, including two U.S. patents and 17 foreign patents that we co-own with third parties. The issuance of a patent is not conclusive as to its scope, validity or enforceability. Thus, any patent held by us or to be issued to us from a pending patent application, could be challenged, invalidated or held unenforceable in litigation or proceedings before the U.S. Patent and Trademark Office, or USPTO, and/or other patent tribunals. Third parties could develop technologies that circumvent the patent protection we have secured. No consistent policy regarding the breadth of patent claims has emerged to date in the United States and the landscape could become more uncertain in view of future rule changes by the USPTO, the introduction of patent reform legislation and decisions in patent law cases by the federal courts including the United States Supreme Court.

The patent landscape outside the United States is even less predictable. As a result, the validity and enforceability of patents cannot be predicted with certainty. For example, we are aware of competitors that manufacture and market aerogel insulation products in China, where it may be difficult for us to enforce our intellectual property rights against these or other competitors. On May 5, 2016, we filed a complaint for patent infringement against Nano Tech Co., Ltd. (“Nano”) and Guangdong Alison Hi-Tech., Ltd., (“Alison”) which we refer to collectively as the Respondents, in the United States International Trade Commission, or ITC. In addition to Respondents’ contention at the ITC that the patents we have asserted there are invalid, Alison has also filed petitions with United States Patent and Trademark Office requesting Inter-Partes Review to cancel certain claims in two of the asserted manufacturing process patents. Alison has also filed similar requests with the Chinese Patent Office to invalidate our manufacturing process patent and another unrelated patent in China. We also filed a patent infringement suit on April 11, 2016 at the District Court in Mannheim, Germany against the Respondents and two European distributors. We have since settled with one European distributor.

in exchange for a commitment not to procure infringing products and cooperation with our case. Nano has initiated a nullity action in German Federal Court against one of our manufacturing process patents in Germany. The litigation against the other defendants is ongoing. See “—We have initiated intellectual property litigation that will be costly, and could limit or invalidate our intellectual property rights, divert time and efforts away from business operations, require us to pay damages and/or costs and expenses and/or otherwise have an adverse material impact on our business, and we could become subject to additional intellectual property litigation in the future” below.

In addition, we may fail to apply for patents on important technologies or product candidates in a timely fashion, if at all, and our existing and future patents may not be sufficiently broad to prevent others from practicing our technologies or from developing competing products or technologies, in particular given the long history of aerogel development. Furthermore, third parties could practice our intellectual property rights in territories where we do not have patent protection. Such third parties may then try to import products made using our intellectual property rights into the United States or other countries. Our strategy is to seek registration of trademarks for our brands in many, but not all, of the jurisdictions in which we sell our products based on various factors, including our sales volumes in the jurisdiction, our ability to enforce local laws and cost. Our strategy may not be adequate to protect our brands in all circumstances, especially in foreign jurisdictions.

As of September 30, 2016, we had 24 pending U.S. patent applications and 56 pending foreign patent applications, including two pending U.S. patent application and two foreign pending patent applications that we co-own with other third parties. Our pending patent applications are directed to various enabling technologies for the product forms, applications and manufacturing technologies that support our current business, as well as aspects of products under development or contemplated for the future. The issuance of patents from these applications involves complex legal and factual questions and, thus, we cannot provide assurance that any of our pending patent applications will result in the issuance of patents to us. The USPTO, relevant foreign patent offices and other relevant patent tribunals may deny or require significant narrowing of claims in our pending patent applications. Patents issued as a result of any of our pending patent applications may not cover our enabling technology and/or the products or processes that support our current or future business or afford us with significant commercial protection against others with similar technology. Proceedings before the USPTO could result in adverse decisions as to the priority of our inventions and the narrowing or invalidation of claims in issued patents. In addition, our pending patent applications filed in foreign countries are subject to laws, rules and procedures that differ from those of the United States, and thus foreign patent applications may not be granted even if counterpart United States patents are issued.

We have initiated intellectual property litigation that will be costly, and could limit or invalidate our intellectual property rights, divert time and efforts away from business operations, require us to pay damages and/or costs and expenses and/or otherwise have an adverse material impact on our business, and we could become subject to additional such intellectual property litigation in the future.

The success of our business is highly dependent on protecting our intellectual property rights. Unauthorized parties may attempt to copy or otherwise obtain and use our products and/or enabling technology. Policing the unauthorized use of our intellectual property rights is difficult and expensive, as is enforcing these rights against unauthorized use by others. Identifying unauthorized use of our intellectual property rights is difficult because we may be unable to monitor the technologies and/or materials being employed by other parties. The steps we have taken or will take may not prevent unauthorized use of our intellectual property rights, particularly in foreign countries where enforcement of intellectual property rights may be more difficult than in the United States.

On May 5, 2016, we filed a complaint for patent infringement against Nano Tech Co., Ltd. and Guangdong Alison Hi-Tech., Ltd. in the United States International Trade Commission. The ITC complaint alleges that these two China-based companies have engaged and are engaging in unfair trade practices by importing and selling aerogel products in the United States that infringe several of our patents. In the ITC complaint, we are seeking exclusion orders directing United States Customs and Border Protection to stop the importation of infringing products. On June 2, 2016, the ITC instituted an investigation based on our complaint. The investigation is ongoing with participation from the Respondents through their respective counsel. We also filed a patent infringement suit on April 11, 2016 at the District Court in Mannheim, Germany against the Respondents and two European distributors. We have since settled with one European distributor in exchange for a commitment not to procure infringing products and cooperation with our case. The litigation against the other defendants is ongoing. The defendants have sought to invalidate our patents in various jurisdictions and we expect defendants to bring similar actions in additional jurisdictions or against additional patents. We will incur additional costs to defend such actions. Due to their nature, it is difficult to predict the outcome or the costs involved in any litigation. Furthermore, the Respondents may have significant resources and interest to litigate and, therefore, this litigation could be protracted and may ultimately involve significant legal expenses.

Our continued commercial success will also depend in part upon not infringing the patents or violating other intellectual property rights of third parties. We are aware of patents and patent applications generally relating to aspects of our technologies filed by, and issued to, third parties. Our knowledge of the patent landscape with respect to the technologies currently embodied within our aerogel

products and the technologies that we practice in manufacturing those products indicates that the third-party patent rights most relevant to our business are those owned by Cabot and licensed to us under the cross license agreement with Cabot. Nevertheless, we cannot determine with certainty whether patents or patent applications of other parties may materially affect our ability to conduct our business. There may be existing patents of which we are unaware that we may inadvertently infringe, resulting in claims against us or our customers. In recent years, Chinese, Japanese and South Korean entities have filed a significant number of patent applications related to aerogel products in both their home countries and in foreign countries. These patents in application areas of aerogels may make it more difficult for OEMs and end-use customers in these countries to use our products in new and different applications, which in turn may limit our ability to penetrate new markets.

In the event that the manufacture, use and/or sale of our products or technologies is challenged, or if our product forms or technologies conflict with patent rights of others or our operations conflict with trademark or similar rights of others, third parties could bring legal actions against us in the United States, Europe or other countries, claiming damages and seeking to enjoin the manufacturing and/or marketing of our products. In addition, it is not possible to predict with certainty what patent claims may arise from pending patent applications of third parties. In the United States, for example, patent prosecution can proceed in secret prior to issuance of a patent, provided such application is not filed in a foreign jurisdiction. For U.S. patent applications that are also filed in foreign jurisdictions, such patent applications will not be published until 18 months from the filing date of the application. As a result, third parties may be able to obtain patents with claims relating to our product forms, applications and/or manufacturing processes which they could attempt to assert against us or our end-users.

In the case of any of the above, litigation may be necessary to enforce, protect or defend our intellectual property rights or to determine the validity and scope of the intellectual property rights of others. Any such litigation, including our ongoing patent enforcement actions described above, could be unsuccessful, cause us to incur substantial costs, divert resources and the efforts of our personnel away from daily operations, harm our reputation and/or result in the impairment of our intellectual property rights. In some cases, litigation may be threatened or brought by a patent holding company (otherwise known as non-practicing entities or patent “trolls”) or other adverse patent owner who has no relevant product revenues and against which our patents may provide little or no deterrence. If we are found to infringe any patents, regardless of whether litigation is brought against us by third parties or, as in the case of our ongoing patent enforcement actions described above, brought by us against third parties, we could be required to:

- pay substantial monetary damages, including lost profits, reasonable royalties and/or treble damages if an infringement is found to be willful;
- totally discontinue or substantially modify any products or processes that are found to be in violation of another party’s intellectual property rights; and/or
- seek a license to continue making and selling our products and/or using our manufacturing processes, which we may not be able to obtain on reasonable terms, if at all, which could significantly increase our operating expenses and/or decrease our revenue.

In the actions brought by us against third parties, including our ongoing patent enforcement actions described above, we may be required to pay costs and expenses of opposing parties, including attorney fees, if we lose.

If our competitors are able to use our technology without payment to us, our ability to compete effectively could be harmed. Our contracts generally indemnify our customers for third-party claims of intellectual property infringement related to the manufacture and use of our products, and typically up to the amount of the purchase price paid for the product, which could cause us to become involved, and subject to liability, in litigation between our customers and third parties. The expense of defending these claims may adversely affect our results of operations.

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.* We registered shares of our common stock in connection with our initial public offering pursuant to a registration statement on Form S-1 (File No. 333-195523), which was declared effective by the SEC on June 12, 2014, and a registration statement on Form S-1 (File No. 333-196719) filed pursuant to Rule 462(b) of the Securities Act of 1933, as amended, or the Securities Act.

We received aggregate net proceeds from the offering of approximately \$74.7 million, after deducting \$4.3 million of underwriting discounts and approximately \$3.5 million of offering expenses.

As of September 30, 2016, we have used \$19.8 million of the net proceeds of the offering to repay all amounts outstanding under our subordinated notes and our revolving credit facility; \$30.6 million of the net proceeds of the offering for capital expenditures related to our third production line; and \$6.3 million of the net proceeds of the offering for our planned manufacturing facility in Statesboro, Georgia. The remainder of the net proceeds is held in a deposit account and money market account with a major financial institution in North America. We have broad discretion in the use of the net proceeds from our initial public offering and could spend the proceeds in ways that do not improve our results of operations or enhance the value of our stock. There has been no material change in our planned use of the balance of the net proceeds from the offering as described in our final prospectus dated June 12, 2014, filing with the Securities and Exchange Commission on June 16, 2014.

- (c) *Purchases of Equity Securities By the Issuer and Affiliated Purchasers* . We did not repurchase any of our equity securities during the quarter ended September 30, 2016.

Item 3. Defaults Upon Senior Securities.

None.

Item 4. Mine Safety Disclosures.

Not applicable.

Item 5. Other Information.

None.

Item 6. Exhibits.

(a) Exhibits

- 10.1 Amendment to the Amended and Restated Loan and Security Agreement, dated August 19, 2016, by and between the Registrant and Silicon Valley Bank.
- 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 September 30, 2016, formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets (unaudited) as of September 30, 2016 and December 31, 2015, (ii) the Consolidated Statements of Operations (unaudited) for the three and nine months ended September 30, 2016 and 2015, (iii) the Consolidated Statements of Cash Flows (unaudited) for the nine months ended September 30, 2016 and 2015, and (iv) the Notes to Consolidated Financial Statements (unaudited).

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: November 3, 2016

By: /s/ Donald R. Young

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

Date: November 3, 2016

By: /s/ John F. Fairbanks

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

**CONSENT FIRST AMENDMENT
TO
AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT**

This Consent and First Amendment to Amended and Restated Loan and Security Agreement (this “ **Amendment** ”) is entered into this 19th day of August, 2016 by and between **SILICON VALLEY BANK** (“ **Bank** ”) and **ASPEN AEROGELS, INC.**, a Delaware corporation (“ **Borrower** ”) whose address is 30 Forbes Road, Building B, Northborough, Massachusetts 01532.

R ECITALS

A. Bank and Borrower have entered into that certain Amended and Restated Loan and Security Agreement dated as of September 3, 2014 (as the same may from time to time be further amended, modified, supplemented or restated, the “ **Loan Agreement** ”).

B. Bank has extended credit to Borrower for the purposes permitted in the Loan Agreement.

C. Borrower has requested that Bank amend the Loan Agreement to (i) extend the maturity date, and (ii) make certain other revisions to the Loan Agreement as more fully set forth herein.

D. Bank has agreed to so amend certain provisions of the Loan Agreement, but only to the extent, in accordance with the terms, subject to the conditions and in reliance upon the representations and warranties set forth below.

A GREEMENT

N OW , T HEREFOR E , in consideration of the foregoing recitals and other good and valuable consideration, the receipt and adequacy of which is hereby acknowledged, and intending to be legally bound, the parties hereto agree as follows:

1. Definitions. Capitalized terms used but not defined in this Amendment shall have the meanings given to them in the Loan Agreement.

2. Amendment to Loan Agreement.

2.1 Section 13 (Definitions). The following term and its definition set forth in Section 13.1 is amended in its entirety and replaced with the following:

“ **Revolving Line Maturity Date** ” is November 29, 2016.

3. Limitation of Amendments.

3.1 The amendments set forth in Section 2 above are effective for the purposes set forth herein and shall be limited precisely as written and shall not be deemed to (a) be a consent to any amendment, waiver or modification of any other term or condition of any Loan Document, or (b) otherwise prejudice any right or remedy which Bank may now have or may have in the future under or in connection with any Loan Document.

3.2 This Amendment shall be construed in connection with and as part of the Loan Documents and all terms, conditions, representations, warranties, covenants and agreements set forth in the Loan Documents, except as herein amended, are hereby ratified and confirmed and shall remain in full force and effect.

4. Consent to Transactions. Borrower has notified Bank that Borrower plans to form a wholly-owned Subsidiary, Aspen Aerogels Georgia, LLC, a Georgia limited liability company (“**Georgia Sub**”) in order to acquire certain real and personal property in Statesboro, Bulloch County, Georgia, and in connection therewith, grant a lien on all assets of Georgia Sub to certain creditors and engage in a sale-leaseback transaction with respect to such assets, including certain real estate to be acquired from the Bullock County Development Authority (the “**Subsidiary Lien**”, and together with the formation of Georgia Sub, the “**Transactions**”). Accordingly, notwithstanding the terms of the Loan Agreement, including Section 7.5 (Encumbrance) or Section 7.7 (Distributions; Investments), the Bank hereby consents to the Transactions for such purposes as may be required under the Loan Document, and acknowledges that the Subsidiary Liens shall constitute “Permitted Liens” under the Loan Agreement and the other Loan Documents. Please note that the foregoing consent applies only to the Transactions and is not a consent to or waiver of any subsequent application of the same provision of the Loan Agreement, nor is it a waiver of any breach of any other provision of the Loan Agreement and the other Loan Documents. This consent does not establish a course of dealing upon which the Borrower may rely on in the future. This letter agreement shall constitute a Loan Document and may be executed in one or more counterparts, each of which when taken together shall constitute an original and one and the same instrument.

5. Representations and Warranties. To induce Bank to enter into this Amendment, Borrower hereby represents and warrants to Bank as follows:

5.1 Immediately after giving effect to this Amendment (a) the representations and warranties contained in the Loan Documents are true, accurate and complete in all material respects as of the date hereof (except to the extent such representations and warranties relate to an earlier date, in which case they are true and correct as of such date), and (b) no Event of Default has occurred and is continuing;

5.2 Borrower has the power and authority to execute and deliver this Amendment and to perform its obligations under the Loan Agreement, as amended by this Amendment;

5.3 The organizational documents of Borrower delivered to Bank on the Effective Date remain true, accurate and complete and have not been amended, supplemented or restated and are and continue to be in full force and effect;

5.4 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, have been duly authorized;

5.5 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not and will not contravene (a) any law or regulation binding on or affecting Borrower, (b) any contractual restriction with a Person binding on Borrower, (c) any order, judgment or decree of any court or other governmental or public body or authority, or subdivision thereof, binding on Borrower, or (d) the organizational documents of Borrower;

5.6 The execution and delivery by Borrower of this Amendment and the performance by Borrower of its obligations under the Loan Agreement, as amended by this Amendment, do not require any order, consent, approval, license, authorization or validation of, or filing, recording or registration with, or exemption by any governmental or public body or authority, or subdivision thereof, binding on Borrower, except as already has been obtained or made; and

5.7 This Amendment has been duly executed and delivered by Borrower and is the binding obligation of Borrower, enforceable against Borrower in accordance with its terms, except as such enforceability may be limited by bankruptcy, insolvency, reorganization, liquidation, moratorium or other similar laws of general application and equitable principles relating to or affecting creditors' rights.

6. Ratification of Perfection Certificate . Borrower hereby ratifies, confirms and reaffirms, all and singular, the terms and disclosures contained in a certain Perfection Certificate dated as of August 31, 2014 delivered by Borrower to Bank, and acknowledges, confirms and agrees the disclosures and information Borrower provided to Bank in said Perfection Certificate have not changed, as of the date hereof.

7. No Defenses of Borrower. Borrower hereby acknowledges and agrees that Borrower has no offsets, defenses, claims, or counterclaims against Bank with respect to the Obligations, or otherwise, and that if Borrower now has, or ever did have, any offsets, defenses, claims, or counterclaims against Bank, whether known or unknown, at law or in equity, all of them are hereby expressly WAIVED and Borrower hereby RELEASES Bank from any liability thereunder.

8. Integration . This Amendment and the Loan Documents represent the entire agreement about this subject matter and supersede prior negotiations or agreements. All prior agreements, understandings, representations, warranties, and negotiations between the parties about the subject matter of this Amendment and the Loan Documents merge into this Amendment and the Loan Documents.

9. Counterparts. This Amendment may be executed in any number of counterparts and all of such counterparts taken together shall be deemed to constitute one and the same instrument.

10. Fees and Expenses . Borrower agrees to promptly pay Bank (i) a fully earned, non-refundable amendment fee in an amount equal to Twelve Thousand Five Hundred Dollars (\$12,500) on the date of this Amendment, and (ii) upon receipt of an invoice, Bank's legal fees and expenses incurred in connection with this Amendment. Borrower agrees to execute such other documents and instruments as Bank may reasonably request.

11. Effectiveness . This Amendment shall be deemed effective upon (a) the due execution and delivery to Bank of this Amendment by each party hereto, and (b) Bank's receipt of the Acknowledgement of Amendment and Reaffirmation of Guaranty substantially in the form attached hereto as Schedule 1, duly executed and delivered by the Guarantor.

[Signature page follows.]

I N W ITNESS W HEREOF , the parties hereto have caused this Amendment to be duly executed and delivered as of the date first written above.

BANK

SILICON VALLEY BANK

By: /s/ Christopher Leary
Name: Christopher Leary
Title: Director

BORROWER

ASPEN AEROGELS, INC.

By: /s/ John F. Fairbanks
Name: John F. Fairbanks
Title: Chief Financial Officer

**ACKNOWLEDGMENT OF AMENDMENT
AND REAFFIRMATION OF GUARANTY**

Section 1. Guarantor hereby acknowledges and confirms that it has reviewed and approved the terms and conditions of the Consent and First Amendment to Amended and Restated Loan and Security Agreement dated as of even date herewith (“the “Amendment”).

Section 2. Guarantor hereby consents to the Amendment and agrees that the Guaranty relating to the Obligations of Borrower under the Loan Agreement shall continue in full force and effect, shall be valid and enforceable and shall not be impaired or otherwise affected by the execution of the Amendment or any other document or instruction delivered in connection herewith.

Section 3. Guarantor represents and warrants that, after giving effect to the Amendment, all representations and warranties contained in the Guaranty are true, accurate and complete as if made the date hereof.

Dated as of August 19, 2016.

GUARANTOR:

ASPEN AEROGELS RHODE ISLAND LLC

By: /s/ John F. Fairbanks

Name: John F. Fairbanks

Title: Chief Financial Officer

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: November 3, 2016

/s/ Donald R. Young

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: November 3, 2016

/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 September 30, 2016 (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: November 3, 2016

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

Dated: November 3, 2016

/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.