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 March 31, 2017

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)**	**04-3559972** **(I.R.S. Employer Identification No.)**
30 Forbes Road, Building B **Northborough, Massachusetts** **(Address of principal executive offices)**	**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, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company," and "emerging growth company" in Rule 12b-2 of the Exchange Act.

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

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

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

As of May 1, 2017, the registrant had 23,508,417 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 — FINANC IAL INFORMATION

Item 1. Financial Statements.

ASPEN AEROGELS, INC.

Consolidated Balance Sheets

(Unaudited)

	March 31, 2017	December 31, 2016
	(In thousands, except share and per share data)	
Assets		
Current assets:		
Cash and cash equivalents	$ 11,228	$ 18,086
Accounts receivable, net of allowances of $83 and $93	17,248	17,535
Inventories	15,132	12,868
Prepaid expenses and other current assets	1,192	1,697
Total current assets	44,800	50,186
Property, plant and equipment, net	82,719	84,394
Other long-term assets	97	89
Total assets	$ 127,616	$ 134,669
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	$ 14,169	$ 13,065
Accrued expenses	4,112	3,987
Deferred revenue	789	1,043
Capital leases, current portion	20	35
Total current liabilities	19,090	18,130
Capital leases, excluding current portion	—	4
Deferred rent	1,082	971
Total liabilities	20,172	19,105
Commitments and contingencies (Note 6)		
Stockholders' equity:		
Preferred stock, $0.00001 par value; 5,000,000 shares authorized, no shares issued and outstanding at March 31, 2017 and December 31, 2016	—	—
Common stock, $0.00001 par value; 125,000,000 shares authorized, 23,508,417 and 23,369,838 shares issued and outstanding at March 31, 2017 and December 31, 2016, respectively	—	—
Additional paid-in capital	534,346	533,088
Accumulated deficit	(426,902)	(417,524)
Total stockholders' equity	107,444	115,564
Total liabilities and stockholders' equity	$ 127,616	$ 134,669

See accompanying notes to unaudited consolidated financial statements.

ASPEN AEROGELS, INC.

Consolidated Statements of Operations

(Unaudited)

	Three Months Ended March 31, 2017	Three Months Ended March 31, 2016
	(In thousands, except share and per share data)	
Revenue:		
Product	$ 22,326	$ 32,286
Research services	676	535
Total revenue	23,002	32,821
Cost of revenue:		
Product	20,470	25,992
Research services	311	302
Gross profit	2,221	6,527
Operating expenses:		
Research and development	1,576	1,310
Sales and marketing	3,110	3,062
General and administrative	6,587	3,913
Total operating expenses	11,273	8,285
Loss from operations	(9,052)	(1,758)
Interest expense, net	(26)	(39)
Total interest expense, net	(26)	(39)
Net loss	$ (9,078)	$ (1,797)
Net loss per share:		
Basic and diluted	$ (0.39)	$ (0.08)
Weighted-average common shares outstanding:		
Basic and diluted	23,257,541	23,063,471

See accompanying notes to unaudited consolidated financial statements.

ASPEN AEROGELS, INC.

Consolidated Statements of Cash Flows

(Unaudited)

	Three Months Ended March 31, 2017	Three Months Ended March 31, 2016
	(In thousands)	
Cash flows from operating activities:		
Net loss	$ (9,078)	$ (1,797)
Adjustments to reconcile net loss to net cash used in operating activities:		
Depreciation and amortization	2,676	2,410
Stock-compensation expense	1,244	1,370
Lease incentives	(22)	—
Other	(1)	(13)
Changes in operating assets and liabilities:		
Accounts receivable	442	(2,291)
Inventories	(2,264)	393
Prepaid expenses and other assets	497	966
Accounts payable	2,238	1,508
Accrued expenses	125	(2,203)
Deferred revenue	(254)	(542)
Deferred rent	(22)	(15)
Net cash used in operating activities	(4,419)	(214)
Cash flows from investing activities:		
Capital expenditures	(2,146)	(3,128)
Net cash used in investing activities	(2,146)	(3,128)
Cash flows from financing activities:		
Repayment of obligations under capital lease	(7)	(23)
Payments made for employee restricted stock tax withholdings	(286)	(82)
Net cash used in financing activities	(293)	(105)
Net decrease in cash	(6,858)	(3,447)
Cash at beginning of period	18,086	32,804
Cash at end of period	$ 11,228	$ 29,357
Supplemental disclosures of cash flow information:		
Interest paid	$ 40	$ 52
Income taxes paid	$ —	$ —
Supplemental disclosures of non-cash activities:		
Changes in accrued capital expenditures	$ (1,134)	$ 484
Advanced billings	$ —	$ 292

See accompanying notes to unaudited consolidated financial statements.

(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.

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, 2016 (the Annual Report), filed with the Securities and Exchange Commission on March 2, 2017.

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 March 31, 2017 and the results of its operations for the three months ended March 31, 2017 and 2016 and the cash flows for the three month periods then ended. The Company has evaluated events through the date of this filing.

The results of operations for the three months ended March 31, 2017 are not necessarily indicative of the results to be expected for the year ending December 31, 2017 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.

(2) Significant Accounting Policies

Principles of Consolidation

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

Use of Estimates

The preparation of the consolidated financial statements requires the Company to make a number of estimates and assumptions that affect the reported amounts of assets and liabilities at the date of the consolidated financial statements and the reported amounts of revenues and expenses during the reporting period. Significant items subject to such estimates and assumptions include allowances for doubtful accounts, sales returns and allowances, product warranty costs, inventory valuation, the carrying amount of property and equipment, stock-based compensation and deferred income taxes. The Company evaluates its estimates and assumptions on an on-going basis using historical experience and other factors, including the current economic environment, which are believed to be reasonable under the circumstances. Management adjusts such estimates and assumptions when facts and circumstances 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.

Revenue Recognition

The Company recognizes revenue from the sale of products and performance 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 three months ended March 31, 2017 , the Company granted 481,373 restricted common stock units (RSUs) and non-qualified stock options (NSOs) to purchase 320,571 shares of common stock to employees under the 2014 Employee, Director and Consultant Equity Incentive Plan (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 oper ating expenses, as applicable, and consists of the following:

	Three Months Ended March 31,	
	2017	2016
	(In thousands)	
Cost of product revenue	$ 204	$ 192
Research and development expenses	138	140
Sales and marketing expenses	268	261
General and administrative expenses	634	777
Total stock-based compensation	$ 1,244	$ 1,370

Effective January 1, 2017, the Company adopted the provision of Financial Accounting Standards Board (FASB) Accounting Standards Update (ASU) 2016-09, Compensation – Stock Compensation (Topic 718): Improvements to Employee Share-Based Payment Accounting (ASU 2016-09) related to the timing of accounting for the forfeitures of share based awards using a modified retrospective transition method by means of a cumulative-effect adjustment to equity as of January 1, 2017 of $0.3 million. Effective January 1, 2017, the Company will record the impact of forfeitures of service based awards at the time an award is forfeited.

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 467,396 shares to 6,536,597 shares effective January 1, 2017.

As of March 31, 2017, 3,244,691 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 March 31, 2017, 92,947 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 March 31, 2017, there were 2,485,081 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 income (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 income (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 March 31,	
	2017	2016
	(In thousands)	
Revenue:		
U.S.	$ 9,130	$ 11,413
International	13,872	21,408
Total	$ 23,002	$ 32,821

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.

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

During the three months ended March 31, 2017, the Company recorded warranty expense of $0.9 million. This specific warranty charge was related to a product claim for a specific product application issue .

Recently Issued Accounting Standards

In March 2016, the FASB issued 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 has adopted this standard effective January 1, 2017. The provision of ASU 2016-09 related to the timing of accounting for the forfeitures of share based awards was adopted using a modified retrospective transition method by means of a cumulative-effect adjustment to equity as of January 1, 2017 of $0.3 million. The other provisions of ASU 2016-09 have been adopted prospectively.

In February 2016, the FASB issued ASU 2016-02, *Leases (Topic 842)*. 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 permitted only as of annual and interim periods in fiscal years beginning after December 15, 2016. The Company expects to adopt the modified retrospective 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. The Company adopted this standard effective January 1, 2017. There was no material impact on the Company's consolidated financial statements and disclosures.

In August 2016, the FASB issued ASU 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.

(3) Inventories

Inventories consist of the following:

		March 31, 2017		December 31, 2016
		(In thousands)		
Raw materials	$	3,556	$	3,511
Finished goods		11,576		9,357
Total	$	15,132	$	12,868

(4) Property, Plant and Equipment, Net

Property, plant and equipment consist of the following:

		March 31, 2017		December 31, 2016	Useful life
		(In thousands)			
Construction in progress	$	11,216	$	11,139	—
Buildings		23,929		23,901	30 years
Machinery and equipment		114,370		113,659	3-10 years
Computer equipment and software		7,817		7,679	3 years
Total		157,332		156,378	
Accumulated depreciation		(74,613)		(71,984)	
Property, plant and equipment, net	$	82,719	$	84,394	

Depreciation expense was $2.7 million and $2.4 million for the three months ended March 31, 2017 and 2016, respectively.

Construction in progress totaled $11.2 million and $11.1 million at March 31, 2017 and December 31, 2016, respectively, which included engineering designs and other pre-construction costs for the planned manufacturing facility in Statesboro, Georgia of $7.2 million at March 31, 2017 and December 31, 2016.

(5) Accrued Expenses

Accrued expenses consist of the following:

		March 31, 2017		December 31, 2016
		(In thousands)		
Employee compensation	$	2,661	$	2,796
Other accrued expenses		1,451		1,191
Total	$	4,112	$	3,987

(6) Commitments and Contingencies

Customer Supply Agreement

During 2016, the Company entered into a supply agreement and a side agreement (together, the Supply Agreement) and a joint development agreement (the JDA) 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. Upon expiration of the Supply Agreement, the Company will be subject to a post-termination supply commitment for an additional two years. The JDA is designed to facilitate the collaboration between the parties on the development and commercialization of new products.

In addition, under the terms of the Supply Agreement, BASF will make a non-interest bearing prepayment to the Company in the aggregate amount of $22 million during the construction of the Company's planned manufacturing facility in Statesboro, Georgia (Plant Two), subject to the Company's prior satisfaction of certain preconditions, 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 first day of the calendar quarter following the date on which the 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.

As of March 31, 2017, the Company anticipates that the impact of constrained capital investment and low activity levels in the global energy markets will continue through 2017. With this view of the market, the Company has 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 the prepayment preconditions and commencement of the quarterly prepayments from BASF will be delayed until the preconditions are satisfied.

Revolving Line of Credit

The Company entered into an Amended and Restated Loan and Security Agreement with Silicon Valley Bank (Loan Agreement), on August 31, 2014, which has been subsequently amended from time to time. On January 27, 2017, the Loan Agreement was amended to extend the maturity date of the revolving credit facility to January 28, 2018. Under the Loan Agreement, the Company may borrow up to $20 million subject to compliance with certain covenants and borrowing base limitations. At the Company's election, the interest rate applicable to borrowings 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 line fee of 0.5% per annum of the average unused portion of the facility. The Company's obligations under the Loan Agreement are secured by a first priority security interest in all assets of the Company, including those at the East Providence facility, except for certain exclusions.

At March 31, 2017 and December 31, 2016, the Company had no amounts drawn on the revolving credit facility. Under the Loan Agreement, the Company is required to comply with both non-financial and financial covenants, including minimum Adjusted EBITDA and minimum Adjusted Quick Ratio, as defined. At March 31, 2017, the Company was in compliance with all such financial covenants.

The Company has been required to provide its landlord for its Northborough, Massachusetts facility with letters of credit securing certain obligations. As of January 31, 2017, these obligations were released by the landlord. 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 $2.4 million and $2.7 million at March 31, 2017 and December 31, 2016, respectively, which reduce the funds otherwise available to the Company under the facility. Based on the available borrowing base, the effective amount available to the Company under the revolving credit facility at March 31, 2017 was $9.7 million after consideration of the $2.4 million of outstanding letters of credit.

Litigation

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

(7) Deferred Rent

For leases that contain fixed increases in the minimum annual lease payment during the original term of the lease, the Company recognizes rental expense on a straight-line basis over the lease term, and records the difference between rent expense and the amount currently payable as deferred rent.

Lease incentives for allowances for qualified leasehold improvements received from the landlord are amortized on a straight-line basis over the lease term. These improvements and the funding received from the landlord are recorded as fixed asset additions and a deferred rent liability on the consolidated balance sheet. The deferred rent liability is being amortized as a reduction to rent expense over the life of the lease.

Cash flows from the landlord for the reimbursement of improvements have been reported within cash from operating activities, while cash flows remitted for the acquisition of leasehold improvements are classified within investing activity cash flows. As of March 31, 2017, deferred rent included $0.8 million in deferred lease incentives and $0.5 million of straight-line rental obligations.

Deferred rent consists of the following:

	March 31, 2017	December 31, 2016
	(In thousands)	
Deferred rent	$ 1,251	$ 1,125
Current maturities of deferred rent	(169)	(154)
Deferred rent, less current maturities	$ 1,082	$ 971

(8) Net Loss Per Share

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

	Three Months Ended March 31, 2017	Three Months Ended March 31, 2016
	(In thousands, except share and per share data)	
Numerator:		
Net loss	$ (9,078)	$ (1,797)
Denominator:		
Weighted average shares outstanding, basic and diluted	23,257,541	23,063,471
Net loss per share, basic and diluted	$ (0.39)	$ (0.08)

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 March 31, 2017	Three Months Ended March 31, 2016
Common stock options	2,382,710	1,952,879
Restricted common stock units	954,928	759,510
Common stock warrants	115	131
Restricted common stock awards	153,277	132,130
Total	3,491,030	2,844,650

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

(9) 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, 2016, filed with the Securities and Exchange Commission on March 2, 2017, 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 Statements," which includes our financial statements and related notes, elsewhere in this Quarterly Report on Form 10-Q.

Overview

We design, develop and manufacture innovative, high-performance aerogel insulation used primarily in the energy infrastructure and building materials markets. We believe our aerogel blankets deliver the best thermal performance of any widely used insulation product available on the market today and provide a combination of performance attributes unmatched by traditional insulation materials. Our end-use customers select our products where thermal performance is critical and to save money, 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 products for applications as diverse as wall systems, military and commercial aircraft, trains, buses, appliances, apparel, footwear and outdoor gear.

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

Our salespeople work directly with end-use customers and engineering firms to promote the qualification, specification and acceptance of our products. We also rely on an existing and well-established channel of qualified insulation distributors and contractors in more than 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 governm ent 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 approximately 50 million square feet of aerogel blankets. During the first quarter of 2016, we announced the planned construction of a second manufacturing facility in Statesboro, Georgia supported by a package of incentives from the State of Georgia and local governmental authorities. During the fourth quarter of 2016, we elected to delay construction of this facility to better align the capacity expansion with our assessment of demand for the 2018 to 2020 time period.

During 2016, we entered into a strategic partnership with BASF SE to develop and commercialize products for the building materials and other markets. The strategic partnership included a supply agreement governing the sale of our Spaceloft A2 product to BASF and a joint development agreement targeting innovative products and technologies. Subject to certain preconditions, BASF also agreed to make a series of prepayments to us in the aggregate of $22 million during the construction of our planned manufacturing facility in Statesboro, Georgia. The prepayments will be either credited against amounts invoiced to BASF for Spaceloft A2 or repaid by us to BASF after December 31, 2023. As a result of our decision to delay construction of the Statesboro facility, we have yet to fulfill the preconditions, and commencement of the prepayments from BASF will be delayed until the preconditions are satisfied.

Our revenue for the three months ended March 31, 2017 was $23.0 million, which represented a decrease of $9.8 million from the three months ended March 31, 2016. Net loss for the three months ended March 31, 2017 was $9.1 million and net loss per diluted share was $0.39. Net loss for the three months ended March 31, 2016 was $1.8 million and net loss per diluted share was $0.08.

Key Metrics and Non-GAAP Financial Measures

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

Square Foot Operating Metric

We price our product and measure our product shipments in square feet. We estimate our annual nameplate capacity was approximately 50 million square feet of aerogel blankets at March 31, 2017. We believe the square foot operating metric allows us and our investors to measure our manufacturing capacity and product shipments on a uniform and consistent basis. The following chart sets forth product shipments associated with recognized revenue in square feet for the periods presented:

	Three Months Ended March 31,	
	2017	**2016**
	(In thousands)	
Product shipments in square feet	8,273	11,846

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. 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 under our bonus plan.

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

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

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

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

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

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

	Three Months Ended March 31, 2017	Three Months Ended March 31, 2016
	(In thousands)	
Net loss	$ (9,078)	$ (1,797)
Depreciation and amortization	2,676	2,410
Stock-based compensation (1)	1,244	1,370
Interest expense	26	39
Adjusted EBITDA	$ (5,132)	$ 2,022

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

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

As a result of the conclusion of a multiyear petrochemical project with a major Asian energy company, which comprised 25% of our product revenue during 2016, in combination with the impact of constrained capital investment and low activity levels in the gl obal energy infrastructure market, we expect a decrease in revenue and an associated increase in net loss and loss per share and a decrease in Adjusted EBITDA during the year ending December 31, 2017 versus the comparable period in 2016. Given fixed cost s tructures and lag times for implementing reductions of certain variable costs, the percentage increase in net loss and loss per share and decrease in 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.

As a result of the conclusion of the multiyear petrochemical project with a major Asian energy company, which comprised 25% of our product revenue during 2016, in combination with the impact of constrained capital investment and low activity levels in the global energy infrastructure market, we expect to experience a decrease in revenue during 2017.

Cost of Revenue

Cost of revenue for our product revenue consists primarily of materials and manufacturing expense, including 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 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 the longer term, 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 the second 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.

As a result of the conclusion of the multiyear petrochemical project with a major Asian energy company, which comprised 25% of our product revenue during 2016, in combination with the impact of constrained capital investment and low activity levels in the global energy infrastructure market, we expect a decrease in revenue and associated increase in manufacturing expense as a percentage of revenue during 2017.

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, our material and manufacturing costs, realized capacity utilization and the costs associated with expansions and start-up of production capacity. Accordingly, we expect our gross profit in absolute dollars and as a percentage of revenue to vary significantly from period to period. As 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.

A s a result of the conclusion of the m ultiyear petrochemical project with a major Asian energy company , which comprised 25% of our product revenue during 2016, in combination with the impact of constrained capital investment and low activity levels in the global energy infrastructure market, we expect a decrease in revenue and an associated decrease in gross profit and gross profit as a percentage of revenue during 2017. Given fixed cost structures and lag times for implementing reductions of certain variable costs, the percentage decrease in gross profit could be significantly greater than any percentage decrease in revenue. However, in the longer term , 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, we expect such expenses will increase as a percentage of revenue during 2017.

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, we expect such expenses will increase as a percentage of revenue during 2017.

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. During 2017, we expect general and administrative expense will increase both in absolute dollars and as a percentage of revenue. In the longer term, we expect that general and administrative expenses will decrease both in absolute dollars and as a percentage of revenue.

Other Expense, Net

For the three months ended March 31, 2017 and 2016, other expense, net consisted primarily of fees related to our revolving credit facility.

Provision for Income Taxes

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

Results of Operations

Three months ended March 31, 2017 compared to the three months ended March 31, 2016

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

Revenue

	Three Months Ended March 31,				Change	
	2017		2016			
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	($ in thousands)					
Revenue:						
Product	$ 22,326	97%	$ 32,286	98%	$ (9,960)	(31)%
Research services	676	3%	535	2%	141	26%
Total revenue	$ 23,002	100%	$ 32,821	100%	$ (9,819)	(30)%

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

	Three Months Ended March 31,		Change	
	2017	2016	Amount	Percentage
Product shipments in square feet (in thousands)	8,273	11,846	(3,573)	(30)%

Total revenue decreased $9.8 million, or 30%, to $23.0 million for the three months ended March 31, 2017 from $32.8 million in the comparable period in 2016 primarily as a result of a decrease in product revenue.

Product revenue decreased by $10.0 million, or 31%, to $22.3 million for the three months ended March 31, 2017 from $32.3 million in the comparable period in 2016. This decrease was principally the result of a decrease in sales to a major Asian energy company associated with the conclusion of a multiyear petrochemical project, a decline in project work in the subsea market, and a broad based decline in revenue in the global downstream market.

Product revenue for the three months ended March 31, 2017 included $3.7 million to a North American distributor, $3.4 million to an Asian distributor and $2.6 million to a North American manufacturer. Product revenue for the three months ended March 31, 2016 included $6.7 million to a major Asian energy company, $4.7 million to a North American distributor and $3.6 million to an Asian distributor.

The average selling price per square foot of our products decreased by $0.03, or 1%, to $2.70 per square foot for the three months ended March 31, 2017 from $2.73 per square foot for the three months ended March 31, 2016. The decrease in average selling price reflected a year-over-year decline in the mix of high-priced subsea products, offset, in large part, by a decrease in the mix of products sold to the major Asian energy company with lower, project-based pricing. This decrease in average selling price had the effect of decreasing product revenue by $0.2 million for the three months ended March 31, 2017 from the comparable period in 2016.

In volume terms, product shipments decreased by 3.6 million square feet, or 30%, to 8.3 million square feet of aerogel products for the three months ended March 31, 2017, as compared to 11.8 million square feet for the three months ended March 31, 2016. The decrease in product volume had the effect of decreasing product revenue by $9.8 million for the three months ended March 31, 2017 from the comparable period in 2016.

Research services revenue increased $0.2 million, or 26%, to $0.7 million for the three months ended March 31, 2017 from $0.5 million in the comparable period in 2016. The increase was primarily due to the timing and amount of funding available under existing research contracts during the three months ended March 31, 2017 from the comparable period in 2016.

Product revenue was 97% of total revenue for the three months ended March 31, 2017 and 98% for the three months ended March 31, 2016 . Research services revenue was 3% of total revenue for the three months ended Ma rch 31, 2017 and 2% of total revenue for the three months ended March 31, 2016 .

Cost of Revenue

	Three Months Ended March 31,							
	2017			2016			Change	
	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	$ 20,470	92%	89%	$ 25,992	81%	79%	$ (5,522)	(21)%
Research services	311	46%	1%	302	56%	1%	9	3%
Total cost of revenue	$ 20,781	90%	90%	$ 26,294	80%	80%	$ (5,513)	(21)%

Total cost of revenue decreased $5.5 million, or 21%, to $20.8 million for the three months ended March 31, 2017 from $26.3 million in the comparable period in 2016. The decrease in total cost of revenue was the result of a decrease in product cost of revenue.

Product cost of revenue decreased $5.5 million, or 21%, to $20.5 million for the three months ended March 31, 2017 from $26.0 million in the comparable period in 2016. The $5.5 million decrease was the result of a $4.9 million or 34% decrease in material costs and a $0.6 million decrease in manufacturing expense year over year. The decrease in material costs was principally driven by the 31% decrease in product revenue, and, to a lesser extent, a favorable mix of products sold, offset, in part, by an increase in warranty expense of $0.9 million. The decrease in manufacturing expense was the result of decreases in utilities expense of $0.5 million and compensation expense of $0.2 million, offset, in part, by an increase in depreciation expense of $0.1 million.

Product cost of revenue as a percentage of product revenue increased to 92% during the three months ended March 31, 2017 from 81% during the three months ended March 31, 2016 primarily due an increase in manufacturing expense as a percentage of product cost of revenue for the three months ended March 31, 2017 from the comparable period in 2016. This increase was the result of the high proportion of fixed manufacturing expenses that remained essentially unchanged despite the 31% decrease in product revenue for the three months ended March 31, 2017 versus the comparable period in 2016.

Research services cost of revenue was $0.3 million for the three months ended March 31, 2017 and 2016. Cost of research service revenue as a percentage of research services revenue decreased to 46% during the three months ended March 31, 2017 from 56% in the comparable period in 2016 due to the higher mix of internal labor in 2017 versus outside services utilized to support the contracted research.

Gross Profit

	Three Months Ended March 31,					
	2017		2016		Change	
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
			($ in thousands)			
Gross profit	$ 2,221	10%	$ 6,527	20%	$ (4,306)	(66)%

Gross profit decreased $4.3 million, or 66%, to $2.2 million for the three months ended March 31, 2017 from $6.5 million in the comparable period in 2016. The decrease in gross profit was the result of the $9.8 million decrease in total revenue offset, in part, by the $5.5 million decrease in total cost of sales. The decrease in revenue was principally associated with the impact of constrained capital investment and low activity levels in the global energy infrastructure market. The decrease in total cost of sales was driven by reduced material costs and, to a lesser extent, decreased manufacturing expenses associated with the 31% decline in product revenue.

Gross profit as a percentage of total revenue decreased to 10% of total revenue for the three months ended March 31, 2017 from 20% in the comparable period in 2016. In 2017, we expect gross profit as a percentage of total revenue will decrease versus 2016. The expected decrease in gross profit reflects our expectation that, given the fixed cost levels in our manufacturing facility, the expected percentage reduction in cost of total revenue will not fully offset the expected percentage reduction in total revenue in 2017.

__Research and Development Expenses__

	Three Months Ended March 31,					
	2017		2016		Change	
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	($ in thousands)					
Research and development expenses	$ 1,576	7%	$ 1,310	4%	$ 266	20%

Research and development expenses increased $0.3 million, or 20%, to $1.6 million for the three months ended March 31, 2017 from $1.3 million in the comparable period in 2016. The $0.3 million increase was primarily due to an increase of $0.2 million in compensation related expenses and a $0.1 million increase in depreciation expense.

Research and development expenses as a percentage of total revenue increased to 7% for the three months ended March 31, 2017 as compared to 4% in the comparable period in 2016 primarily due to the decline in total revenue for the three months ended March 31, 2017.

We expect that our research and development expenses during 2017 will increase from 2016 expense levels in support of new product development, improved manufacturing technology and the costs associated with the operation of our newly constructed full scale pilot line. Due to the expected growth in research and development expenses and the projected decline in total revenue, we expect research and development expenses as a percentage of total revenue to increase in 2017. In the long term, we expect to continue 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 March 31,					
	2017		2016		Change	
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	($ in thousands)					
Sales and marketing expenses	$ 3,110	14%	$ 3,062	9%	$ 48	2%

Sales and marketing expenses remained flat at $3.1 million for the three months ended March 31, 2017 from the comparable period in 2016. Increases in compensation related costs of $0.1 million were offset by reductions in general marketing expenses of $0.1 million.

Sales and marketing expenses as a percentage of total revenue increased to 14% for the three months ended March 31, 2017 from 9% in the comparable period in 2016 due principally to the decline in total revenue during the three months ended March 31, 2017.

We expect sales and marketing expenses to increase modestly during 2017 in line with a planned increase in sales personnel and marketing efforts. Due to the expected growth in sales and marketing expenses and the projected decline in total revenue, we expect sales and marketing expenses as a percentage of total revenue to increase in 2017. In the long term, we expect that sales and marketing expenses will increase in absolute dollars as we continue to increase sales personnel and marketing efforts in support of expected growth in 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 March 31,					
	2017		2016		Change	
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	($ in thousands)					
General and administrative expenses	$ 6,587	29%	$ 3,913	12%	$ 2,674	68%

General and administrative expenses increased $2.7 million, or 68% to $6.6 million during the three months ended March 31, 2017 from $3.9 million in the comparable period in 2016 . The $2.7 million increase was primarily the result of increases in patent enforcement costs of $2.5 million , payroll and related costs of $0.2 million, and legal and professional fees of $0 .1 million , offset, in part, by a decrease in stock-based compensation expense of $ 0.1 million.

General and administrative expenses as a percentage of total revenue increased to 29% for the three months ended March 31, 2017 from 12% in the comparable period in 2016. This increase was due to the combined effect of the increase in patent enforcement costs and the decline in total revenue during the three months ended March 31, 2017.

We expect general and administrative expenses to increase during 2017 as we expect to pay incentive based compensation related to 2017 performance that did not occur in 2016. Due to the expected growth in general and administrative expenses and the projected decline in total revenue, we expect general and administrative expenses as a percentage of total revenue to increase in 2017.   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 high levels of legal expense in the near term and, if such actions are protracted, could result in significant additional legal expense over the medium to long term. In the long term, we expect to continue to increase general and administrative personnel and expense levels to support the anticipated growth of our business and continued expansion of our manufacturing operations. As a result, we expect that general and administrative expenses will increase in absolute dollars but decrease as a percentage of revenue due to projected growth in product revenue.

Other Expense, net

	Three Months Ended March 31,					
	2017		2016		Change	
	Amount	Percentage of Revenue	Amount	Percentage of Revenue	Amount	Percentage
	($ in thousands)					
Interest expense, net	$ (26)	(0)%	$ (39)	(0)%	$ 13	(33)%

Other expense, net of less than $0.1 million during the three months ended March 31, 2017 and 2016 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.

Through 2015, we experienced revenue growth and gained share in our target markets. Despite a decline in revenue in 2016 and an expected decline in revenue in 2017, our financial projections anticipate long-term revenue growth, with increasing levels of gross profit and improved cash flows from operations. However, we expect to incur significant capital expenditures related to the expansion of our manufacturing capacity to support this expected long term growth in demand.

We believe that our existing cash balance and available credit will be sufficient to fund the design and development and a portion of the 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, customer prepayments and potentially equity financings to provide the capital required to complete the first production line in our second manufacturing facility.

We currently anticipate that constrained capital investment and low activity levels in the global energy markets will continue through 2017. With this view of the market, we elected in late 2016 to temporarily delay the board approved project to construct a second manufacturing facility and its related financing to better align the capacity expansion with our assessment of demand for the 2018 to 2020 period. In addition, we intend to manage capital expenditures and working capital balances during 2017 to maintain the cash resources required to support current operating requirements and our long term capacity plan.

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 March 31, 2017, we had $11.2 million of cash and cash equivalents.

At March 31, 2017, our only debt obligations were less than $0.1 million related to capital lease obligations. At March 31, 2017, we also had $2.4 million of outstanding letters of credit secured by the revolving credit facility with Silicon Valley Bank.

We have maintained the revolving credit facility with Silicon Valley Bank since March 2011, which has been amended from time to time. 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. The revolving credit facility matures on January 28, 2018.

Due to the borrowing base limitations of the revolving credit facility, the effective amount available to us under the facility at March 31, 2017 was $9.7 million after giving effect to the $2.4 million of letters of credit outstanding. As of March 31, 2017, we had no outstanding balances drawn on the revolving credit facility.

Analysis of Cash Flow

Net Cash Used in Operating Activities

During the three months ended March 31, 2017, we used $4.4 million in net cash in operating activities, as compared to the use of $0.2 million in net cash during the comparable period in 2016, an increase in the use of cash of $4.2 million. This increase in use of cash was the result of the increase in net loss adjusted for non-cash items of $7.2 million, offset, in part, by an increase in cash provided by changes in operating assets and liabilities of $2.8 million.

Net Cash Used in Investing Activities

Net cash used in investing activities is primarily related to capital expenditures to support our growth. Net cash used in investing activities for the three months ended March 31, 2017 and 2016 was $2.1 million and $3.1 million, respectively.

Net cash used in investing activities for the three months ended March 31, 2017 included a total of $2.1 million in capital expenditures for machinery and equipment to improve the throughput and efficiency of our East Providence facility. Net cash used in investing activities for the three months ended March 31, 2016 included $3.1 million of capital expenditures for the engineering and design and other pre-construction costs related to our planned manufacturing facility in Statesboro, Georgia, and machinery and equipment to improve the throughput and efficiency of our East Providence facility.

Net Cash Used in Financing Activities

Net cash used in financing activities for the three months ended March 31, 2017 totaled $0.3 million and consisted of $0.3 million for payments made for employee tax withholdings associated with the vesting of restricted stock units and less than $0.1 million for repayments of obligations under capital leases. Net cash used in financing activities for the three months ended March 31, 2016 totaled $0.1 million and included $0.1 million for payments made for employee tax withholdings associated with the vesting of restricted stock units and less than $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

There have been no material changes to our contractual obligations and commitments as reported in our Annual Report on Form 10-K for the year ending December 31, 2016, filed with the SEC on March 2, 2017.

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, 2016, filed on March 2, 2017 with the Securities and Exchange Commission, and note 2 to our consolidated financial statements included elsewhere in this Quarterly Report on Form 10-Q for information about these critical accounting policies, as well as a description of our other significant accounting policies.

Certain Factors That May Affect Future Results of Operations

The 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; 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, and the potential for it to support the development of new aerogel products and technologies; our beliefs about the usefulness of the square foot operating metric; our beliefs about the financial metrics that are indicative of our core performance; our beliefs about the usefulness of our presentation of Adjusted EBITDA; our expectations about the effect of manufacturing capacity on financial metrics such as Adjusted EBITDA; our 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 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 intentions about managing capital expenditures and working capital balances; our expectations about incurring significant capital expenditures in the future; our expectations about the expansion of our workforce and resources and its effect on sales and marketing, general and administrative, and related expenses; our expectations about future product revenue and demand for our products; our expectations about the effect of stock based compensation on various costs and expenses; our expectations about potential sources of future financing; our beliefs about the impact of accounting policies on our financial statements; our beliefs about the effect of interest rates, inflation and foreign currency fluctuations on our results of operations and financial condition; and our beliefs about the expansion of our international operations.

Words such as "may," "will," "anticipate," "estimate," "expects," "projects," "intends," "plans," "believes" and words and terms of similar substance used in connection with any discussion of future operating or financial performance, identify forward-looking statements. All forward-looking statements are management's present expectations of future events and are subject to a number of risks and uncertainties that could cause actual results to differ materially and adversely from those described in the forward-looking statements. These risks include, but are not limited to, those set forth in 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, 201 6 .

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 March 31, 2017, we had unrestricted cash and cash equivalents of $11.2 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 March 31, 2017, we have no debt outstanding other than capital lease obligations of approximately $0.1 million with fixed interest rates. At March 31, 2017, we also had $2.4 million of outstanding letters of credit.

Under our revolving credit facility, we are permitted to borrow a maximum of $20.0 million, subject to continued covenant compliance and borrowing base requirements. At our election, the interest rate applicable to borrowings under the revolving credit facility may be based on the prime rate or LIBOR. Prime rate-based rates vary from prime rate plus 0.75% per annum to prime rate plus 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. The maturity date of our revolving credit facility is January 28, 2018.

Due to the borrowing base limitations, the effective amount available to us under the revolving credit facility at March 31, 2017 was $9.7 million after giving effect to the $2.4 million of letters of credit outstanding. As of March 31, 2017, 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 March 31, 2017, 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 March 31, 2017, 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 March 31, 2017, 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 — OTHE R 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 (“USPTO”) requesting Inter-Partes Review to cancel certain claims in three of the asserted manufacturing process patents and a product patent. As of April 27, 2017, the USPTO has denied Alison’s petitions to institute Inter-Partes Review on three manufacturing process patents and has not yet issued a decision on Alison’s petition to institute Inter-Partes Review of the product patent. Alison has also filed similar requests with the Chinese Patent Office (“SIPO”) seeking to invalidate two of our Chinese manufacturing process patents and two of our Chinese product patents.

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 asserting their infringement of one of our German patents. We subsequently asserted their infringement of another three patents against Nano and a European distributor of Alison’s products at the Mannheim court. We have since settled with the other 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. Nano has also initiated a nullity action in German Federal Patent Court against one of our asserted German manufacturing process patents. Alison likewise filed an opposition to one of the asserted patents at the European Patent Office on April 18, 2017.

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, these litigation matters could be protracted and may ultimately involve significant legal expenses. In addition to the foregoing, we have been and may be from time to time party to other legal proceedings that arise in the ordinary course of business and to other patent enforcement actions to assert our patent rights.

Item 1A. Risk Factors.

There have been no material changes to the risk factors included in our Annual Report on Form 10-K for the fiscal year ended December 31, 2016.

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 March 31, 2017, 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; $31.0 million of the net proceeds of the offering for capital expenditures related to our third production line; $7.2 million of the net proceeds of the offering for our planned manufacturing facility in Statesboro, Georgia; and $5.5 million of the net proceeds of the offering for general corporate purposes. 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, filed with the SEC on June 16, 2014.

(c) *Purchases of Equity Securities By the Issuer and Affiliated Purchasers* .

We did not repurchase an y of our equity securities during the quarter ended March 3 1 , 201 7 .

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 Fourth Amendment to the Amended and Restated Loan and Security Agreement, dated January 27, 2017, by and between the Company 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 March 31, 2017, formatted in XBRL (eXtensible Business Reporting Language): (i) the Consolidated Balance Sheets (unaudited) as of March 31, 2017 and December 31, 2016, (ii) the Consolidated Statements of Operations (unaudited) for the three months ended March 31, 2017 and 2016, (iii) the Consolidated Statements of Cash Flows (unaudited) for the three months ended March 31, 2017 and 2016, and (iv) the Notes to Consolidated Financial Statements (unaudited).

SIGNA TURES

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: May 4, 2017	By:	/s/ Donald R. Young Donald R. Young President and Chief Executive Officer (principal executive officer)
Date: May 4, 2017	By:	/s/ John F. Fairbanks John F. Fairbanks Vice President, Chief Financial Officer and Treasurer (principal financial officer and principal accounting officer)

Exhibit 10.1

FOURTH A MENDMENT
TO
AMENDED AND RESTATED LOAN AND SECURITY AGREEMENT

This Fourth Amendment to Amended and Restated Loan and Security Agreement (this " **Amendment** ") is entered into this 27th day of January, 2017 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.

Recitals

A. Bank and Borrower have entered into that certain Amended and Restated Loan and Security Agreement dated as of September 3, 2014, as amended by that certain Consent and First Amendment to Amended and Restated Loan and Security Agreement dated as of August 19, 2016, as further amended by that certain Second Amendment to Amended and Restated Loan and Security Agreement dated as of November 23, 2016, and as further amended by that certain Third Amendment to Amended and Restated Loan and Security Agreement dated as of December 29, 2016 (as amended, and as the same may from time to time be further amended, restated, amended and restated, modified and/or supplemented, the " **Loan Agreement** ").

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

C. Borrower has requested that Ba nk 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.

Agreement

Now, Therefore, 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 2.3 (Overadvances) . Section 2.3 is amended by deleting the reference to "the Default Rate" therein and inserting in lieu thereof "a per annum rate equal to the rate that is otherwise applicable to Advances plus five percent (5.00%)".

2.2 Section 3.2(a) and (b) (Conditions Precedent to all Credit Extensions) . Subsections (a) and (b) of Section 3.2 are amended in their entirety and replaced with the following:

"(a) receipt of the Notice of Borrowing and any materials and documents required by and in accordance with Section 3.4(a);

(b) the representations and warranties in this Agreement shall be true, accurate, and complete in all material respects on the date of the proposed Credit Extension and on the Funding Date of each Credit Extension; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date, and no Event of Default shall have occurred and be continuing or immediately result from the Credit Extension. Each Credit Extension is Borrower's representation and warranty on that date that the representations and warranties in this Agreement remain true, accurate, and complete in all material respects; provided, however, that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided, further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date; and"

2.3 Section 3.4(a) (Procedures for Borrowing) . Section 3.4(a) is amended in its entirety and replaced with the following:

"(a) Subject to the prior satisfaction of all other applicable conditions to the making of an Advance set forth in this Agreement, an Advance shall be made upon Borrower's irrevocable written notice delivered to Bank in the form of a Notice of Borrowing or without instructions if any Advances is necessary to meet Obligations which have become due , and such Notice of Borrowing shall indicate whether Borrower is requesting an Advance with respect to Eligible Accounts, Eligible Foreign Accounts, or Eligible Inventory, as applicable . The Notice of Borrowing shall be made by Borrower through Bank's online banking program, provided, however, if Borrower is not utilizing Bank's online banking program, then such Notice of Borrowing shall be in the form attached hereto as Exhibit C and shall be executed by an Authorized Signer. The Notice of Borrowing must be received by Bank prior to 12:00 p.m. Eastern time, (i) at least three (3) Business Days prior to the requested Funding Date, in the case of any LIBOR Advance, and (ii) on the requested Funding Date, in the case of a Prime Rate Advance, specifying: (1) the amount of the Advance; (2) the Currency in which such Advance shall be denominated; (3) the requested Funding Date; (4) whether the Advance is to be comprised of LIBOR Advances or Prime Rate Advances; and (5) the duration of the Interest Period applicable to any such LIBOR Advances included in such notice; provided that if the Notice of Borrowing shall fail to specify the duration of the Interest Period for any Advance comprised of LIBOR Advances, such Interest Period shall be one (1) month. In addition to such Notice of Borrowing, when a Streamline Period is not in effect, Borrower must promptly deliver to Bank by electronic mail or through Bank's online banking program such reports and information, including without limitation, sales journals, cash receipts journals, accounts receivable aging reports, as Bank may request in its sole discretion."

2.4 Section 6.2 (a) and (b) (Financial Statements, Reports, Certificates) . Subsections (a) and (b) of Section 6.2 are amended in their entirety and replaced with the following:

"(a) a Borrowing Base Report (and any schedules related thereto (i) with each request for an Advance, (ii) on the fifteenth (15 th) day (if the 15 th is not a Business Day, on the preceding Business Day) and last day of each month when a Streamline Period is not in effect, and (iii) within twenty (20) days after the end of each month when a Streamline Period is in effect;

(b) (1) within twenty (20) days after the end of each month, (A) monthly accounts receivable agings, aged by invoice date, (B) monthly accounts payable agings, aged by invoice date, and outstanding or held check registers, if any, and (C) monthly reconciliations of accounts receivable agings (aged by invoice date), transaction reports, Deferred Revenue report, and general ledger; and (2) perpetual inventory reports for Inventory valued on a first-in, first-out basis at the lower of cost or market (in accordance with GAAP) or such other inventory reports as are requested by Bank in its good faith business judgment (i) on the fifteenth (15 th) day (if the 15 th is not a Business Day, on the preceding Business Day) and last day of each month when a Streamline Period is not in effect, and (ii) within twenty (20) days after the end of each month when a Streamline Period is in effect;"

2.5 Section 6.3(c) (**Accounts Receivable; Collection of Accounts**). Subsection (c) of Section 6.3 is amended in its entirety and replaced with the following:

"(c) Collection of Accounts . Borrower shall direct Account Debtors to deliver or transmit all proceeds of Accounts into a lockbox account, or such other "blocked account" as specified by Bank (either such account, the " **Cash Collateral Account** "). Whether or not an Event of Default has occurred and is continuing, Borrower shall immediately deliver all payments on and proceeds of Accounts to the Cash Collateral Account. All amounts received in the Cash Collateral Account shall be (i) subject to the Bank's right to maintain a reserve pursuant to Section 6.3(g), applied to immediately reduce the Obligations when a Streamline Period is not in effect (unless Bank, in its sole discretion, elects not to so apply such amounts), or (ii) transferred on a daily basis to Borrower's operating account with Bank when a Streamline Period is in effect. Borrower hereby authorizes Bank to transfer to the Cash Collateral Account any amounts that Bank reasonably determines are proceeds of the Accounts (provided that Bank is under no obligation to do so and this allowance shall in no event relieve Borrower of its obligations hereunder)."

2.6 Section 6.3(e) (**Accounts Receivable; Verification**). Subsection (e) of Section 6.3 is amended in its entirety and replaced with the following:

"(e) Verifications; Confirmations; Credit Quality; Notifications . Bank may, from time to time, after consultation with the Borrower, verify and confirm directly with the respective Account Debtors the validity, amount and other matters relating to the Accounts, either in the name of Borrower or Bank or such other name as Bank may choose, and notify any Account Debtor of Bank's security interest in such Account."

2.7 Section 6.3(g) (**Accounts Receivable**). Section 6.3 is hereby amended by inserting the following new subsection (g) immediately following subsection (f) thereof:

"(g) Reserves . Notwithstanding any terms in this Agreement to the contrary, at times when an Event of Default exists, Bank may hold any proceeds of the Accounts and any amounts in the Cash Collateral Account that are not applied to the Obligations pursuant to Section 6.3(c) above (including amounts otherwise required to be transferred to Borrower's operating account with Bank when a Streamline Period is in effect) as a reserve to be applied to any Obligations regardless of whether such Obligations are then due and payable. "

2.8 Section 6.6 (Access to Collateral; Books and Records) . Section 6.6 is amended in its entirety and replaced with the following:

" **6.6 Access to Collateral; Books and Records** . At reasonable times, on one (1) Business Day's notice (provided no notice is required if an Event of Default has occurred and is continuing), Bank, or its agents, shall have the right to inspect the Collateral and the right to audit and copy Borrower's Books. The foregoing inspections and audits shall be conducted no more often than once every twelve (12) months unless an Event of Default has occurred and is continuing in which case such inspections and audits shall occur as often as Bank shall determine is necessary. The foregoing inspections and audits shall be conducted at Borrower's expense and the charge therefor shall be One Thousand Dollars ($1,000) per person per day (or such higher amount as shall represent Bank's then-current standard charge for the same), plus reasonable out-of-pocket expenses. In the event Borrower and Bank schedule an audit more than five (5) days in advance, and Borrower cancels or seeks to or reschedules the audit with less than five (5) days written notice to Bank, then (without limiting any of Bank's rights or remedies) Borrower shall reimburse Bank for any costs incurred by Bank, plus any out-of-pocket expenses directly relating to the cancellation or rescheduling."

2.9 Section 6.9 (Financial Covenants) . Section 6.9 is amended in its entirety and replaced with the following:

" **6.9 Financial Covenants** .

(a) EBITDA . Borrower shall achieve, measured as of the end of each fiscal quarter during the following periods, EBITDA of at least (loss not worse than) the following for the following periods:

Period	**Minimum EBITDA (maximum loss)**
Trailing three (3) month period ending December 31, 2016	($3,000,000)
Trailing six (6) month period ending March 31, 2017	($7,950,000)
Trailing nine (9) month period ending June 30, 2017	($9,400,000)
Trailing twelve (12) month period ending September 30, 2017	($8,800,000)
Trailing twelve (12) month period ending December 31, 2017	($4,250,000)

(b) Adjusted Quick Ratio . Maintain at all times, to be certified to Bank monthly as of the last day of each month, an Adjusted Quick Ratio of at least 1.25 to 1.00."

2.10 Section 6.14 (Online Banking) . The following new Section 6.14 is hereby inserted immediately following Section 6.13:

" **6.14 Online Banking** . Utilize Bank's online banking platform for all matters reasonably requested by Bank which shall include, without limitation (and without request by Bank for the following matters), uploading information pertaining to Accounts and Account Debtors, requesting approval for exceptions, requesting Credit Extensions, and uploading financial statements and other reports required to be delivered pursuant to the terms of this Agreement."

2.11 Section 8.2(a) (Covenant Default) . Section 8.2(a) is amended in its entirety and replaced with the following:

"(a) Borrower fails or neglects to perform any obligation in Sections 6.2 (provided, however, Borrower shall have ten (10) Business Days from the scheduled due date to cure any default under clauses 6.2(b)-(d) and 6.2(i)), 6.5, 6.7(a), 6.8(a), 6.9, 6.10(b), 6.12, 6.13, or violates any covenant in Section 7; or"

2.12 Section 9.2 (Power of Attorney) . Section 9.2 is amended in its entirety and replaced with the following:

“ **9.2** **Power of Attorney** . Borrower hereby irrevocably appoints Bank as its lawful attorney-in-fact, exercisable following the occurrence of an Event of Default, to: (a) endorse Borrower’s name on any checks, payment instruments, or other forms of payment or security; (b) sign Borrower’s name on any invoice or bill of lading for any Account or drafts against Account Debtors; (c) demand, collect, sue, and give releases to any Account Debtor for monies due, settle and adjust disputes and claims about the Accounts directly with Account Debtors, and compromise, prosecute, or defend any action, claim, case, or proceeding about any Collateral (including filing a claim or voting a claim in any bankruptcy case in Bank’s or Borrower’s name, as Bank chooses); (d) make, settle, and adjust all claims under Borrower’s insurance policies; (e) pay, contest or settle any Lien, charge, encumbrance, security interest, or other claim in or to the Collateral, or any judgment based thereon, or otherwise take any action to terminate or discharge the same; and (f) transfer the Collateral into the name of Bank or a third party as the Code permits. Borrower hereby appoints Bank as its lawful attorney-in-fact to sign Borrower’s name on any documents necessary to perfect or continue the perfection of Bank’s security interest in the Collateral regardless of whether an Event of Default has occurred until all Obligations have been satisfied in full and Bank has no further obligation to make Credit Extensions hereunder . Bank’s foregoing appointment as Borrower’s attorney in fact, and all of Bank’s rights and powers, coupled with an interest, are irrevocable until all Obligations have been fully repaid and performed and Bank has no further obligation to make Credit Extensions hereunder .”

2.13 Section 13 (**Definitions**). The following terms and their respective definitions set forth in Section 13.1 is amended in their entirety and replaced with the following:

“ **Borrowing Base** ” is (a) eighty percent (80%) of Eligible Accounts, plus (b) eighty percent (80%) of Eligible Foreign Accounts (provided , however , Eligible Foreign Accounts that are billed in a Foreign Currency shall have an advance rate of seventy percent (70%)), provided , that , the availability under this subsection (b) plus the availability under subsection (c) below shall not exceed seventy-five percent (75%) of the Borrowing Base, plus (c) (i) when a Streamline Period is not in effect, the lesser of eighty percent (80%) of Eligible Specified Accounts or One Million Dollars ($1,000,000) and (ii) during a Streamline Period, eighty percent (80%) of Eligible Specified Accounts (and with respect to subsections (c)(i) and (c)(ii) hereof, when added to the availability under subsection (b) above, in each case subject to the overall cap set forth in subsection (b) above), plus (d) the lesser of thirty-five percent (35%) of the value of Borrower’s Eligible Inventory (valued at the lower of cost or wholesale fair market value) or Three Million Dollars ($3,000,000), as determined by Bank from Borrower’s most recent Borrowing Base Report (and as may subsequently be updated by Bank in Bank’s sole discretion based upon information received by Bank including, without limitation, Accounts that are paid and/or billed following the date of the Borrowing Base Report); provided , however , that Bank may decrease the foregoing amounts and percentages in its good faith business judgment based on events, conditions, contingencies, or risks which, as determined by Bank, may adversely affect the Collateral.

“ **LIBOR** ” means, for any Interest Rate Determination Date with respect to an Interest Period for any Advance to be made, continued as or converted into a LIBOR Advance, the rate of interest per annum determined by Bank to be the per annum rate of interest at which deposits in Dollars are offered to Bank in the London interbank market (rounded upward, if necessary, to the nearest 0.0001%) in which Bank customarily participates at 11:00 a.m. (local time in such interbank market) two (2) Business Days prior to the first day of such Interest Period for a period approximately equal to such Interest Period and in an amount approximately equal to the amount of such Advance; provided that, in the event such rate of interest is less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

“ **Prime Rate** ” is the rate of interest per annum from time to time published in the money rates section of The Wall Street Journal or any successor publication thereto as the “prime rate” then in effect; provided that, in the event such rate of interest is less than zero, such rate shall be deemed to be zero for purposes of this Agreement; and provided further that if such rate of interest, as set forth from time to time in the money rates section of The Wall Street Journal, becomes unavailable for any reason as determined by Bank, the “Prime Rate” shall mean the rate of interest per annum announced by Bank as its prime rate in effect at its principal office in the State of California (such Bank announced Prime Rate not being intended to be the lowest rate of interest charged by Bank in connection with extensions of credit to debtors); provided that, in the event such rate of interest is less than zero, such rate shall be deemed to be zero for purposes of this Agreement.

“ **Revolving Line Maturity Date** ” is January 28, 2018.

2.14 Section 13 (Definitions) . The preamble in the definition of Eligible Accounts set forth in Section 13.1 is deleted in its entirety and replaced with the following:

“ **Eligible Accounts** ” means Accounts which arise in the ordinary course of Borrower’s business that meet all Borrower’s representations and warranties in Section 5.3 and are due and owing from Account Debtors deemed creditworthy by Bank in its good faith business judgment. Bank reserves the right upon prior written notice to

Borrower at any time after the Effective Date to adjust any of the criteria set forth below and to establish new criteria in its good faith business judgment. Unless Bank otherwise agrees in writing, Eligible Accounts shall not include:"

2.15 Section 13 (Definitions) . The following new defined term is hereby inserted in Section 13.1 in the appropriate alphabetical order:

" **Borrowing Base Report** " is that certain report of the value of certain Collateral in the form attached hereto as Exhibit E .

2.16 Section 13 (Definitions) . The following defined terms set forth in Section 13.1 are deleted in their entirety:

" **Transaction Report** " is the Bank's standard reporting package provided by Bank to Borrower.

" **Unfinanced Capital Expenditures** " means, with respect to any Person for any period, the aggregate of all Capital Expenditures by such Person and its Subsidiaries during such period that are not financed or funded using proceeds from (a) the issuance of additional equity interests of Borrower, (b) Subordinated Debt, (c) specific equipment financing, (d) other capital permitted by Bank, and in all instances that are Capital Expenditures as determined in accordance with GAAP, or (e) government grants or other incentives.

2.17 Exhibit B (Compliance Certificate) . The Compliance Certificate attached to the Loan Agreement as Exhibit B is amended in its entirety and replaced with the Compliance Certificate in the form of Exhibit B attached hereto.

2.18 Exhibit E (Borrowing Base Report) . The Borrowing Base Report attached hereto as Exhibit E is hereby inserted immediately following Exhibit D of the Loan Agreement.

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

4.1 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;

4.2 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;

4.3 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;

4.4 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;

4.5 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;

4.6 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 subdivi sion thereof, binding on Borrower, except as already has been obtained or made; and

4.7 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.

5. Updated Perfection Certificate . Borrower has delivered an updated Perfection Certificate dated on or about the date of this Amendment (the " **Updated Perfection Certificate** "), which Updated Perfection Certificate shall supersede in all respects that certain Perfection Certificate dated as of August 31, 2014. Borrower and Bank acknowledge and agree that all references in the Loan Agreement to the "Perfection Certificate" shall hereinafter be deemed to be a reference to the Updated Perfection Certificate.

6. 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.

7. 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.

8. 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.

9. Fees and Expenses . Borrower agrees to promptly pay Bank, upon receipt of an invoice, Bank's legal fees and expenses incurred in connection with this Amendment.

10. Effectiveness . As a condition precedent to the effectiveness of this Amendment and the Bank's obligation to make the Advances under the Revolving Line, the Bank shall have received the following documents prior to or concurrently with this Amendment, each in form and substance satisfactory to Bank:

10.1 this Amendment duly executed on behalf of Borrower;

10.2 the Acknowledgement of Amendment and Reaffirmation of Guaranty substantially in the form attached hereto as Schedule 1, duly executed and delivered by the Guarantor;

10.3 a duly executed officer's certificate or secretary's certificate, attaching copies of each of (i) the organizational documents of Borrower as in effect on the date hereof, (ii) the resolutions of Borrower authorizing the execution and delivery of this Amendment, the other documents executed in connection herewith and Borrower's performance of all of the transactions contemplated hereby, and (iii) an incumbency certificate giving the name and bearing a specimen signature of each individual who shall be so authorized on behalf of Borrower;

10.4 a good standing certificate of Borrower, certified by the Secretary of State of the jurisdiction of formation and each jurisdiction in which Borrower is qualified to do business, dated as of a date no earlier than thirty (30) days prior to the date hereof;

10.5 certified copies, dated as of a recent date, of financing statement and other lien searches of Borrower and Guarantor, as Bank may request and which shall be obtained by Bank, accompanied by written evidence (including any UCC termination statements) that the Liens revealed in any such searched either (i) will be terminated prior to or in connection with the execution of this Amendment, or (ii) in the sole discretion of Bank, will constitute Permitted Liens;

10.6 evidence satisfactory to Bank that the insurance policies required for Borrower are in full force and effect, together with appropriate evidence showing lender loss payable and/or additional insured clauses or endorsements in favor of Bank;

10.7 the Updated Perfection Certificate executed by Borrower, together with the duly executed original signature thereto; and

10.8 Borrower's payment of a fully earned, non-refundable amendment fee in an amount equal to Fifty Thousand Dollars ($50,000), payable on the date of this Amendment.

[Signature page follows.]

In Witness Whereof, the parties hereto have caused this Amendment to be duly executed and delivered as of the date first written above.

BANK	**BORROWER**
SILICON VALLEY BANK	ASPEN AEROGELS, INC.
By: _ /s/ Christopher Leary ________	By: /s/ John F. Fairbanks _________
Name: __ Christopher Leary ______	Name: _ John F. Fairbanks _______
Title: Director _________________	Title: Chief Financial Officer ____

Schedule 1

ACKNOWELDGMENT 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 Fourth 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 January 27, 2017.

GUARANTOR : ASPEN AEROGELS RHODE ISLAND LLC

By: /s/ John F. Fairbanks________

Name: _ John F. Fairbanks______

Title: __ Chief Financial Officer _

EXHIBIT B

COMPLIANCE CERTIFICATE

TO: SILICON VALLEY BANKDate:
FROM: ASPEN AEROGELS, INC.

The undersigned authorized officer of Aspen Aerogels, Inc. (" **Borrower** ") certifies that under the terms and conditions of the Amended and Restated Loan and Security Agreement between Borrower and Bank (as amended and in effect, the " **Agreement** "), (1) Borrower is in complete compliance for the period ending _______________ with all required covenants except as noted below, (2) there are no Events of Default, (3) all representations and warranties in the Agreement are true and correct in all material respects on this date except as noted below; provided , however , that such materiality qualifier shall not be applicable to any representations and warranties that already are qualified or modified by materiality in the text thereof; and provided , further that those representations and warranties expressly referring to a specific date shall be true, accurate and complete in all material respects as of such date , (4) Borrower, and each of its Subsidiaries, has timely filed all required tax returns and reports, and Borrower has timely paid all foreign, federal, state and local taxes, assessments, deposits and contributions owed by Borrower except as otherwise permitted pursuant to the terms of Section 5.9 of the Agreement, and (5) no Liens have been levied or claims made against Borrower or any of its Subsidiaries, if any, relating to unpaid employee payroll or benefits of which Borrower has not previously provided written notification to Bank. Attached are the required documents supporting the certification. The undersigned certifies that these are prepared in accordance with GAAP consistently applied from one period to the next except as explained in an accompanying letter or footnotes. The undersigned acknowledges that no borrowings may be requested at any time or date of determination that Borrower is not in compliance with any of the terms of the Agreement, and that compliance is determined not just at the date this certificate is delivered. Capitalized terms used but not otherwise defined herein shall have the meanings given them in the Agreement.

Please indicate compliance status by circling Yes/No under "Complies" column.

Reporting Covenant	Required	Complies
Monthly financial statements with Compliance Certificate	Monthly within 30 days	Yes No
Quarterly financial statements	Quarterly within 45 days	Yes No
Annual financial statement (CPA Audited) + CC	FYE within 150 days	Yes No
10-Q, 10-K and 8-K	Within 5 days after filing with SEC	Yes No
A/R & A/P Agings, and Deferred Revenue reports	Monthly within 20 days	Yes No
Borrowing Base Reports and Inventory reports	15 th and last Business Day of each month (monthly within 20 days when a Streamline Period is in effect) and with each request for a Credit Extension;	Yes No
Projections	FYE within 30 days	Yes No
The following Intellectual Property was registered after the Effective Date (if no registrations, state "None")____		

Financial Covenant	Required	Actual	Complies
Maintain as indicated:			
Minimum EBITDA	*	$	Yes No
Minimum Adjusted Quick Ratio	1.25:1.00	:1.00	Yes No

*See Section 6.9(a)

Performance Pricing		Applies
Adjusted Quick Ratio at least 1.50:1.00	Prime + 0.75% (Eligible Accounts) or Prime + 1.25% (Eligible Foreign Accounts and Eligible Inventory); LIBOR + 3.75% (Eligible Accounts) or LIBOR +4.25% (Eligible Foreign Accounts and Eligible Inventory)	Yes No
Adjusted Quick Ratio less than 1.50:1.00	Prime + 1.25% (Eligible Accounts); Prime + 1.75% (Eligible Foreign Accounts and Eligible Inventory)	Yes No

The following financial covenant analyses and information set forth in Schedule 1 attached hereto are true and accurate as of the date of this Certificate.

The following are the exceptions with respect to the certification above: (If no exceptions exist, state "No exceptions to note.")

ASPEN AEROGELS, INC.	**BANK USE ONLY**
By:	Received by: ____________________
Name:	AUTHORIZED SIGNER
Title:	Date: ________________________
	Verified: _______________________
	AUTHORIZED SIGNER
	Date: ________________________
	Compliance Status: Yes No

Schedule 1 to Compliance Certificate

Financial Covenants of Borrower

In the event of a conflict between this Schedule and the Loan Agreement, the terms of the Loan Agreement shall govern.

I. **EBITDA** (Section 6.9(a))

Required: Borrower shall achieve, measured as of the end of each fiscal quarter during the following periods, EBITDA of at least (loss not worse than) the following for the following periods:

Period	Minimum EBITDA (maximum loss)
Trailing three (3) month period ending December 31, 2016	($3,000,000)
Trailing six (6) month period ending March 31, 2017	($7,950,000)
Trailing nine (9) month period ending June 30, 2017	($9,400,000)
Trailing twelve (12) month period ending September 30, 2017	($8,800,000)
Trailing twelve (12) month period ending December 31, 2017	($4,250,000)

Actual:

A.	Net Income	$
B.	To the extent included in the determination of Net Income	
	1.The provision for income taxes	$
	2.Depreciation expense	$
	3.Amortization expense	$
	4.Net Interest Expense	$
	5.Non-cash stock compensation expense	$
	6.The sum of lines 1 through 5	$
C.	EBITDA (line A plus line B.6)	

Is line C equal to or greater than $___________?

No, not in compliance   Yes, in compliance

II. **M inimum Adjusted Quick Ratio** (Section 6.9(b))

Required: Maintain at all times, to be certified to Bank monthly as of the last day of each month, an Adjusted Quick Ratio of at least 1.25 to 1.00.

Actual:

A.	Aggregate value of the unrestricted cash of Borrower maintained with Bank	$
B.	Aggregate value of accounts receivable of Borrower, net of allowances for bad debt	$
C.	Quick Assets (the sum of lines A and B)	$
D.	Aggregate value of Obligations to Bank	$
E.	Without duplication of line D, the aggregate value of liabilities of Borrower (including all Indebtedness) that matures within one (1) year, but excluding all Subordinated Debt	$
F.	Current Liabilities (the sum of lines D and E)	$
G.	Aggregate value of all amounts received or invoiced by Borrower in advance of performance under contracts and not yet recognized as revenue	$
H.	Line F minus line G	$
I.	Adjusted Quick Ratio (line C divided by line H)	:1.00

Is line I equal to or greater than 1.25 to 1.00?

No, not in compliance Yes, in compliance

<u>EXHIBIT E</u>

BORROWING BASE REPORT

[To be provided by Bank]

Exhibit 31.1

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: May 4, 2017

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

Exhibit 31.2

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: May 4, 2017

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

Exhibit 32

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 March 31, 2017 (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: May 4, 2017	/s/ Donald R. Young
	Donald R. Young President and Chief Executive Officer (principal executive officer)
Dated: May 4, 2017	/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.