

AXCELIS TECHNOLOGIES INC

Form S-3

April 07, 2017

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As filed with the Securities and Exchange Commission on April 7, 2017

Registration No. 333-

SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM S-3

REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

AXCELIS TECHNOLOGIES, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation or organization)

34-1818596
(I.R.S. Employer
Identification Number)

108 Cherry Hill Drive
Beverly, Massachusetts 01915
(978) 787-4000

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

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Lynnette C. Fallon

Executive Vice President, Human Resources/Legal and General Counsel

Axcelis Technologies, Inc.

108 Cherry Hill Drive

Beverly, Massachusetts 01915

(978) 787-4000

(Name, address, including zip code, and telephone number, including area code, of agent for service)

with copies to:

**Matthew C. Dallett
Locke Lord LLP
111 Huntington Avenue
Boston, Massachusetts 02199
(617) 239-0100**

Approximate date of commencement of proposed sale to the public: From time to time after the effective date of this Registration Statement.

If the only securities being registered on this form are being offered pursuant to dividend or interest reinvestment plans, please check the following box.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a registration statement pursuant to General Instruction I.D. or a post-effective amendment thereto that shall become effective upon filing with the Commission pursuant to Rule 462(e) under the Securities Act, check the following box.

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If this Form is a post-effective amendment to a registration statement filed pursuant to General Instruction I.D. filed to register additional securities or additional classes of securities pursuant to Rule 413(b) under the Securities Act, check the following box.

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

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

CALCULATION OF REGISTRATION FEE

Title of each class of securities to be registered	Amount to be Registered	Proposed Maximum Offering Price Per Unit	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee(1)
Common Stock, \$0.001 par value per share	(2)	(3)	(3)	
Preferred stock, \$0.001 par value per share	(2)	(3)	(3)	
Warrants	(2)	(3)	(3)	
Debt Securities	(2)	(3)	(3)	
Units	(2)	(3)	(3)	
Total			\$ 75,000,000	\$ 8,692.50

(1) Calculated pursuant to Rule 457(o) under the Securities Act.

(2) There are being registered hereunder such indeterminate number of shares of common stock and preferred stock, such indeterminate principal amount of debt securities, such indeterminate number of warrants to purchase common stock, preferred stock or debt securities, and such indeterminate number of units as shall have an aggregate initial offering price not to exceed \$75,000,000. If any debt securities are issued at an original issue discount, then the offering price of such debt securities shall be in such greater principal amount as shall result in an aggregate initial offering price not to exceed \$75,000,000, less the aggregate dollar amount of all securities previously issued hereunder. Any securities registered hereunder may be sold separately or as units with other securities registered hereunder. The proposed maximum initial offering price per unit will be determined, from time to time, by the registrant in connection with the issuance by the registrant of the securities registered hereunder. Pursuant to Rule 457(i), the securities registered also include such indeterminate number of shares of common stock and preferred stock and amount of debt securities as may be issued upon conversion of or exchange for preferred stock or debt securities that provide for conversion or exchange, upon exercise of warrants or pursuant to the antidilution provisions of any such securities. In addition, pursuant to Rule 416 under the Securities Act, the shares being registered hereunder include such indeterminate number of shares of common stock and preferred stock as may be issuable with respect to the shares being registered hereunder as a result of stock splits, stock dividends or similar transactions.

(3) The proposed maximum aggregate offering price per class of security will be determined from time to time by the registrant in connection with the issuance by the registrant of the securities registered hereunder and is not specified as to each class of security pursuant to General Instruction II.D. of Form S-3 under the Securities Act.

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Securities and Exchange Commission, acting pursuant to said Section 8(a), may determine.

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The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting offers to buy these securities in any state where the offer or sale is not permitted.

Subject to Completion, dated April 7, 2017

Axcelis Technologies, Inc.

\$75,000,000

**Common stock
Preferred stock
Warrants
Debt Securities
Units**

The aggregate initial offering price of the securities that we offer will not exceed \$75,000,000. We will offer the securities in amounts, at prices and on terms to be determined at the time of the offering.

When we offer securities, we will provide you with a prospectus supplement or term sheet describing the specific terms of the specific issue of securities, including the offering price of the securities. You should carefully read this prospectus and the prospectus supplements or term sheets relating to the specific issue of securities together with additional information described under the heading **Where You Can Find More Information** beginning on Page 22 of this prospectus before you decide to invest in any of these securities.

Our common stock is quoted on The NASDAQ Global Select Market under the symbol **ACLS**. On April 6, 2017, the last reported sale price for the common stock was \$18.10 per share.

In this prospectus, **Axcelis**, **we**, **us**, and **our** refer to Axcelis Technologies, Inc. and its subsidiaries.

These securities may be sold directly by us, through dealers or agents designated from time to time, to or through underwriters or through a combination of these methods. See Plan of Distribution beginning on Page 20 of this prospectus. We may also describe the plan of distribution for any particular offering of these securities in any applicable prospectus supplement. If any agents, underwriters or dealers are involved in the sale of any securities in respect of which this prospectus is being delivered, we will disclose their names and the nature of our arrangements with them in a prospectus supplement and any applicable fees, commissions or discounts. The net proceeds we expect to receive from any such sale will also be included in any prospectus supplement.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. SEE RISK FACTORS ON PAGE 2.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ADEQUACY OR ACCURACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

This prospectus may not be used to sell securities unless it is accompanied by a prospectus supplement.

Prospectus dated _____, 2017

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ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement that we filed with the Securities and Exchange Commission, or SEC, using a shelf registration process. Under this shelf registration process, we may offer to sell any combination of the securities described in this prospectus, either individually or in units, in one or more offerings, with a total value of up to \$75,000,000. This prospectus provides you with a general description of the securities we may offer. Each time we offer a type or series of securities under this prospectus, we will provide a prospectus supplement that will contain more specific information about the terms of those securities. We also may authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. We may also add, update or change in a prospectus supplement or free writing prospectus any of the information contained in this prospectus or in documents we have incorporated by reference into this prospectus. However, no prospectus supplement will fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness. This prospectus, together with the applicable prospectus supplements, free writing prospectuses and the documents incorporated by reference into this prospectus, includes all material information relating to this offering. You should carefully read this prospectus, the applicable prospectus supplement and the additional information described under **Where You Can Find More Information** before buying securities in this offering.

You should rely only on the information we have provided or incorporated by reference in this prospectus, any prospectus supplement and any related free writing prospectus that we may authorize to be provided to you. We have not authorized anyone to provide you with information different from that contained or incorporated by reference in this prospectus. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained or incorporated by reference in this prospectus. You must not rely on any unauthorized information or representation. This prospectus is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus, any prospectus supplement or related free writing prospectus is accurate only as of the date on the front of the document and that any information we have incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus or any sale of a security.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed or will be filed as exhibits to the registration statement of which this prospectus is a part (or will be incorporated by reference from a current report on Form 8-K, quarterly report on Form 10-Q or annual report on Form 10-K that we file with the SEC), and you may obtain copies of those documents as described below under **Where You Can Find More Information**.

AXCELIS TECHNOLOGIES, INC.

Axcelis designs, manufactures and services ion implantation and other processing equipment used in the fabrication of semiconductor chips. Axcelis' business commenced in 1978 and its current corporate entity was incorporated in Delaware in 1995, and is headquartered in Beverly, Massachusetts. Our principal executive offices are located at 108 Cherry Hill Drive, Beverly, Massachusetts 01915, and our telephone number there is (978) 787-4000.

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RISK FACTORS

An investment in our common stock involves a high degree of risk. You should carefully consider the risk factors contained in a prospectus supplement as well as those set forth in our most recently filed periodic reports filed with the SEC, including our Annual Report on Form 10-K for the year ended December 31, 2016, as revised or supplemented by our quarterly reports on Form 10-Q, each of which are on file with the SEC and are incorporated by reference into this prospectus. Before making an investment decision, you should carefully consider these risks as well as other information we include or incorporate by reference in this prospectus or include in any applicable prospectus supplement. The risks described in these documents are not the only ones we face, but those that we consider to be material. There may be other unknown or unpredictable economic, business, competitive, regulatory or other factors that could have material adverse effects on our future results. Past financial performance may not be a reliable indicator of future performance, and historical trends should not be used to anticipate results or trends in future periods. If any of these risks actually occurs, our business, financial condition, results of operations or cash flow could be seriously harmed. This could cause the trading price of our common stock to decline, resulting in a loss of all or part of your investment. Please also read carefully the section below entitled Forward-Looking Statements.

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FORWARD-LOOKING STATEMENTS

This prospectus and the documents incorporated by reference in this prospectus include forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Any statement that is not a statement of historical fact should be considered a forward-looking statement. We often use words or phrases of expectation or uncertainty like believe, anticipate, plan, expect, intent, project, future, may, will, could, would and similar words to help identify forward-looking statements. Examples of forward-looking statements include statements regarding our future financial results, operating results, business strategies, projected costs, product development or future sales, competitive positions and plans and objectives of management for future operations.

We have based these forward-looking statements on our current expectations and projections about future events. However, they are subject to various risks and uncertainties, many of which are outside our control, including the timing of orders and shipments, the conversion of orders to revenue in any particular quarter, or at all, the continuing demand for semiconductor equipment, relative market growth, continuity of business relationships with and purchases by major customers, competitive pressure on sales and pricing, increases in material and other production costs that cannot be recouped in product pricing, global economic, political and financial conditions, and the information incorporated herein under the caption Risk Factors. Accordingly, our actual results or financial condition could differ materially and adversely from those discussed in, or implied by, these forward-looking statements.

All later written and oral forward-looking statements attributable to us or a person acting on our behalf are expressly qualified in their entirety by the applicable cautionary statements. Each forward-looking statement speaks only as of the date on which it is made, and, except to the extent required by federal securities laws, we undertake no obligation to update or revise any forward-looking statements, whether as a result of new information, future events or otherwise.

We caution you not to place undue reliance on our forward-looking statements. You should carefully read this entire prospectus and the documents incorporated by reference in this prospectus, particularly the section entitled Risk Factors.

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We intend to use the net proceeds from the sale of any securities offered under this prospectus for general corporate purposes and/or as indicated in the applicable prospectus supplement. Such purposes may include working capital, capital expenditures, repayment and refinancing of debt, the acquisition of companies, businesses, technology or other assets, stock repurchases and the payment of dividends. We have not determined the amount of net proceeds to be used specifically for any such purposes. As a result, management will retain broad discretion over the allocation of the net proceeds. We expect to temporarily invest the net proceeds in short-term investments until they are used for their intended purpose.

RATIO OF EARNINGS TO FIXED CHARGES

The following table sets forth our ratio of earnings to fixed charges and the dollar amount of the coverage deficiency, if any, for each of the periods indicated. For purposes of this calculation, earnings consist of pre-tax net income (loss) from continuing operations plus fixed charges and amortization of capitalized interest. Fixed charges means the sum of interest expense and an estimate of the interest portion of rental expense under operating leases. We have not issued preferred stock and, accordingly, no preferred stock dividends were declared or paid for any of the periods presented.

(dollars in millions)	Dec. 31, 2012	Dec. 31 2013	Year Ended Dec. 31, 2014	Dec. 31, 2015	Dec. 31, 2016
Ratio of Earnings to Fixed Charges	(A)	(A)	(A)	3.9	3.1
Coverage Deficiency	\$ 32.1	\$ 15.4	\$ 8.7	\$	\$

(A) Our earnings were insufficient to cover fixed charges.

This information should be read in conjunction with our consolidated financial statements and the accompanying notes incorporated by reference in this prospectus.

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DESCRIPTION OF CAPITAL STOCK

Our authorized capital stock currently consists of 75,000,000 shares of common stock, par value \$0.001 per share, and 30,000,000 shares of preferred stock, \$0.001 par value per share. As of December 31, 2016, approximately 29,520,000 shares of common stock were issued and outstanding and an aggregate of approximately 5,500,000 shares were reserved for issuance under outstanding restricted stock units and options to purchase common stock. No shares of preferred stock were outstanding.

The following summary of certain provisions of our common and preferred stock does not purport to be complete. You should refer to our amended and restated certificate of incorporation, as amended (certificate of incorporation) and by-laws, which are filed as exhibits to the registration statement of which this prospectus is a part. The summary below is also qualified by provisions of applicable law.

Common Stock

Holders of common stock are entitled to one vote per share on matters on which our stockholders vote. There are no cumulative voting rights. Holders of common stock are entitled to receive dividends, if declared by our board of directors, out of funds that we may legally use to pay dividends. See Dividend Policy. If we liquidate or dissolve, holders of common stock are entitled to share ratably in our assets once our debts and any liquidation preference owed to holders of preferred stock are paid. All shares of common stock that are outstanding as of the date of this prospectus are fully-paid and nonassessable.

Preferred Stock

We are currently authorized to issue 30,000,000 shares of preferred stock, of which 3,000,000 shares have been designated as Series A Participating Preferred Stock. Our board of directors has the authority to issue the remaining shares of preferred stock in one or more series and to fix the rights of each series. Our board would fix the designations, voting powers, preferences and rights of the preferred stock of each series, as well as the qualifications, limitations or restrictions thereof, in a certificate of designation relating to that series. We would file as an exhibit to the registration statement of which this prospectus is a part, or would incorporate by reference from reports that we file with the SEC, the form of any certificate of designation that describes the terms of the series of preferred stock we are offering before the issuance of that series of preferred stock. This description would include the following items, as applicable:

- the title and stated value;
- the number of shares we are offering;
- the liquidation preference per share;

- the purchase price;
- the dividend rate, period and payment date and method of calculation for dividends;
- whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;
- the procedures for any auction and remarketing, if any;
- the provisions for a sinking fund, if any;
- the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;

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- any listing of the preferred stock on any securities exchange or market;

- whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price, or how it will be calculated, and the conversion period;

- whether the preferred stock will be exchangeable into debt securities, and, if applicable, the exchange price, or how it will be calculated, and the exchange period;

- voting rights, if any;

- preemptive rights, if any;

- restrictions on transfer, sale or other assignment, if any;

- whether interests in the preferred stock will be represented by depositary shares;

- a discussion of any material U.S. federal income tax considerations applicable to the preferred stock;

- the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;

- any limitations on the issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and

- any other specific terms, preferences, rights or limitations of, or restrictions on, the preferred stock.

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The General Corporation Law of the State of Delaware, our state of incorporation, provides that the holders of preferred stock will have the right to vote separately as a class (or, in some cases, as a series) on an amendment to our certificate of incorporation if the amendment would change the par value or, unless the certificate of incorporation provided otherwise, the number of authorized shares of the class or change the powers, preferences or special rights of the class or series so as to adversely affect the class or series, as the case may be. This right is in addition to any voting rights that may be provided for in the applicable certificate of designation.

We believe the power to issue preferred stock will provide our board of directors with flexibility in connection with certain possible corporate transactions. The issuance of preferred stock could, however, adversely affect the voting power of holders of our common stock, restrict their rights to receive payment upon liquidation, and have the effect of delaying, deferring, or preventing a change in control. We have no present plans to issue any shares of preferred stock.

Dividend Policy

We have never declared or paid cash dividends on our capital stock. We currently intend to retain our future earnings, if any, for use in our business and therefore do not anticipate paying cash dividends in the foreseeable future. Payment of future dividends, if any, will be at the discretion of our board of directors after taking into account various factors, including our financial condition, operating results, current and anticipated cash needs and plans for expansion. In addition, should we enter into a bank credit facility, our ability to pay dividends may be restricted.

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Delaware Anti-Takeover Law

We are subject to Section 203 of the Delaware General Corporation Law, an anti-takeover law. In general, Section 203 prohibits a publicly held Delaware corporation from engaging in a business combination with an interested stockholder for a period of three years following the date the person became an interested stockholder, unless the business combination or the transaction in which the person became an interested stockholder is approved in a prescribed manner. Generally, a business combination includes a merger, asset or stock sale, or other transaction resulting in a financial benefit to the interested stockholder. Generally, an interested stockholder is a person who, together with affiliates and associates, owns or within three years before the determination of interested stockholder status, did own, 15% or more of the corporation's voting stock. The existence of this provision may have an anti-takeover effect with respect to transactions not approved in advance by our board of directors, including discouraging attempts that might result in a premium over the market price for the outstanding shares of our common stock.

Charter and By-law Provisions

In addition to the board of directors' ability to issue shares of preferred stock, our certificate of incorporation and by-laws contain the following provisions that may have the effect of discouraging unsolicited acquisition proposals or making more difficult the removal of our incumbent directors and officers (but that are designed to encourage persons seeking to acquire control of us first to negotiate with our board of directors). In each case subject to the rights of the holders of any series of preferred stock:

- special meetings of stockholders may only be called by the Chief Executive Officer, Chairman of the Board or board of directors;
- stockholders do not have the power to take any action by written consent without a meeting;
- the board of directors may enlarge the size of the board and has the right to fill vacancies;
- directors may be removed only (a) for cause by holders of a majority of the outstanding shares of voting stock and (b) without cause by holders of at least 75% of the outstanding shares of voting stock;
- certain provisions of the certificate of incorporation may only be changed by an affirmative vote of 75% of our outstanding capital stock, in addition to any other vote required by law; and

- a stockholder may not nominate any candidate for the board of directors at any annual or special meeting, or bring any other business before an annual meeting, unless that stockholder notifies us of its intention a specified period in advance and provides us with certain required information.

Listing

Our common stock is listed on The Nasdaq Global Select Market under the symbol ACLS.

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is ComputershareTrust Company, N.A.

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DESCRIPTION OF DEBT SECURITIES

If we issue any debt securities offered by this prospectus and any accompanying prospectus supplement, we would issue them under an indenture to be entered into by Axcelis and a trustee to be identified in the applicable prospectus supplement. The terms of the debt securities would include those stated in the indenture and those made part of the indenture by reference to the Trust Indenture Act of 1939, as in effect on the date of the indenture. We have filed a copy of the proposed form of indenture as an exhibit to the registration statement in which this prospectus is included. Each indenture would be subject to and governed by the terms of the Trust Indenture Act of 1939.

We may offer under this prospectus up to \$75,000,000 aggregate principal amount of debt securities; or if debt securities are issued at a discount, or in a foreign currency, foreign currency units or composite currency, the principal amount as may be sold for an initial public offering price of up to \$75,000,000. Unless otherwise specified in the applicable prospectus supplement, the debt securities would represent direct, unsecured obligations of Axcelis that would rank equally with all of our other unsecured indebtedness and would be effectively subordinated to all of our secured debts.

The following statements relating to the debt securities and the indenture are summaries and do not purport to be complete, and are subject in their entirety to the detailed provisions of the indenture.

General

We may issue the debt securities in one or more series with the same or various maturities, at par, at a premium, or at a discount. We will describe the particular terms of each series of debt securities in a prospectus supplement relating to that series, which we will file with the SEC. To review the terms of a series of debt securities, you must refer to both the prospectus supplement for the particular series and to the description of debt securities in this prospectus.

The prospectus supplement would set forth the following terms of the debt securities in respect of which this prospectus is delivered:

- (1) the title;
- (2) the aggregate principal amount;
- (3) the issue price or prices (expressed as a percentage of the aggregate principal amount thereof);

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- (4) any limit on the aggregate principal amount;
- (5) the date or dates on which principal is payable;
- (6) the interest rate or rates (which may be fixed or variable) or, if applicable, the method used to determine the rate or rates;
- (7) the date or dates from which the interest, if any, will be payable and any regular record date for the interest payable;
- (8) the place or places where principal and, if applicable, premium and interest, is payable;
- (9) the terms and conditions upon which Axcelis may, or the holders may require Axcelis to, redeem or repurchase the debt securities;
- (10) the denominations in which the debt securities may be issuable, if other than denominations of \$1,000 or any integral multiple thereof;

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(11) whether the debt securities are to be issuable in the form of certificated debt securities (as described below) or global debt securities (as described below);

(12) the portion of principal amount that will be payable upon declaration of acceleration of the maturity date if other than the principal amount of the debt securities;

(13) the currency of denomination;

(14) the designation of the currency, currencies or currency units in which payment of principal and, if applicable, premium and interest, will be made;

(15) if payments of principal and, if applicable, premium or interest, on the debt securities are to be made in one or more currencies or currency units other than the currency of denomination, the manner in which the exchange rate with respect to these payments will be determined;

(16) if amounts of principal and, if applicable, premium and interest may be determined (a) by reference to an index based on a currency or currencies other than the currency of denomination or designation or (b) by reference to a commodity, commodity index, stock exchange index or financial index, then the manner in which these amounts will be determined;

(17) the provisions, if any, relating to any security provided for the debt securities;

(18) any addition to or change in the covenants and/or the acceleration provisions described in this prospectus or in the indenture;

(19) any events of default;

(20) the terms and conditions for conversion into or exchange for shares of common stock or preferred stock;

(21) any other terms, which may modify or delete any provision of the indenture insofar as it applies to that series;

(22) any depositaries, interest rate calculation agents, exchange rate calculation agents or other agents; and

(23) the terms and conditions, if any, upon which the debt securities shall be subordinated in right of payment to other indebtedness of Axcelis.

We may issue discount debt securities that provide for an amount less than the stated principal amount to be due and payable upon acceleration of the maturity of the debt securities in accordance to the terms of the indenture. We may also issue debt securities in bearer form, with or without coupons. If we issue discount securities or debt securities in bearer form, we would describe United States federal income tax considerations and other special considerations that apply to the debt securities in the applicable prospectus supplement.

We may issue debt securities denominated in or payable in a foreign currency or currencies or a foreign currency unit or units. If we do so, we would describe the restrictions, elections, general tax considerations, specific terms and other information with respect to the issue of debt securities and the foreign currency or currencies or foreign currency unit or units in the applicable prospectus supplement.

Exchange and/or Conversion Rights

If we issue debt securities that may be exchanged for or converted into shares of common stock or preferred stock, we would describe the terms of exchange or conversion in the prospectus supplement relating to those debt securities.

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Transfer and Exchange

We may issue debt securities that would be represented by either:

- (1) book-entry securities, which means that there will be one or more global securities registered in the name of The Depository Trust Company, as depositary, or a nominee of the depositary; or
- (2) certificated securities, which means that they will be represented by a certificate issued in definitive registered form.

We would specify in the prospectus supplement applicable to a particular offering whether the debt securities offered will be book-entry or certificated securities. Except as set forth under "Global Debt Securities and Book Entry System" below, book-entry debt securities would not be issuable in certificated form.

Certificated Debt Securities

If you hold certificated debt securities that have been offered by this prospectus, you may transfer or exchange them at the trustee's office or at the paying agency in accordance with the terms of the indenture. You would not be charged a service charge for any transfer or exchange of certificated debt securities, but may be required to pay an amount sufficient to cover any tax or other governmental charge payable in connection with the transfer or exchange.

You may effect the transfer of certificated debt securities and of the right to receive the principal of, premium and/or interest, if any, on your certificated debt securities only by surrendering the certificate representing your certificated debt securities and having us or the trustee issue a new certificate to the new holder.

Global Debt Securities and Book-Entry System

If we decided to issue debt securities in the form of one or more global securities, then we would register the global securities in the name of the depositary for the global securities or in the nominee of the depositary, and the global securities would be delivered by the trustee to the depositary for credit to the accounts of the holders of beneficial interest in the debt securities. Each global security would:

- be registered in the name of a depositary, or its nominee, that we would identify in a prospectus supplement;

- be deposited with the depository or nominee or custodian; and
- bear any required legends.

No global security may be exchanged in whole or in part for debt securities registered in the name of any person other than the depository or any nominee unless:

- the depository has notified us that it is unwilling or unable to continue as depository or has ceased to be qualified to act as depository, and in either case, we do not appoint a successor depository.
- an event of default has occurred and is continuing with respect to the debt securities of the applicable series;
or
- any other circumstance described in a prospectus supplement has occurred permitting or requiring the issuance of any such security.

As long as the depository, or its nominee, is the registered owner of a global security, the depository or nominee would be considered the sole owner and holder of the debt securities represented by the global security for all

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purposes under the indentures. Except in the above limited circumstances, owners of beneficial interests in a global security would not be:

- entitled to have the debt securities registered in their names;
- entitled to physical delivery of certificated debt securities; or
- considered to be holders of those debt securities under the indenture.

Payments on a global security would be made to the depositary or its nominee as the holder of the global security. Some jurisdictions have laws that require that certain purchasers of securities take physical delivery of such securities in definitive form. These laws may impair the ability to transfer beneficial interests in a global security.

Institutions that have accounts with the depositary or its nominee are referred to as participants. Ownership of beneficial interests in a global security would be limited to participants and to persons that may hold beneficial interests through participants. The depositary would credit, on its book-entry registration and transfer system, the respective principal amounts of debt securities represented by the global security to the accounts of its participants.

Ownership of beneficial interests in a global security would be shown on and effected through records maintained by the depositary, with respect to participants' interests, or any participant, with respect to interests of persons held by participants on their behalf.

Payments, transfers and exchanges relating to beneficial interests in a global security would be subject to policies and procedures of the depositary. The depositary policies and procedures may change from time to time. Neither any trustee nor we would have any responsibility or liability for the depositary's or any participant's records with respect to beneficial interests in a global security.

The prospectus supplement would describe the specific terms of the depositary arrangement for debt securities of a series that are issued in global form. Axcelis and its agents, the trustee, and any of its agents would not have any responsibility or liability for any aspect of the records relating to or payments made on account of beneficial ownership interests in the global debt security or for maintaining, supervising or reviewing any records relating to the beneficial ownership interests.

No Protection in the Event of Change of Control

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The indenture does not have any covenants or other provisions providing for a put or increased interest or otherwise that would afford holders of debt securities additional protection in the event of a recapitalization transaction, a change of control of Axcelis or a highly leveraged transaction. If we offer any covenants of this type or provisions with respect to any debt securities in the future, we would describe them in the applicable prospectus supplement.

Covenants

Unless otherwise indicated in this prospectus or a prospectus supplement, the debt securities would not have the benefit of any covenants that limit or restrict our business or operations, the pledging of our assets or the incurrence by us of indebtedness. We would describe in the applicable prospectus supplement any material covenants of a series of debt securities.

Consolidation, Merger and Sale of Assets

We have agreed in the indenture that we would not consolidate with or merge into any other person or convey, transfer, sell or lease our properties and assets substantially as an entirety to any person, unless:

(1) the person formed by the consolidation or into or with which we are merged or the person to which our properties and assets are conveyed, transferred, sold or leased, is a corporation organized and existing

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under the laws of the United States, any State thereof or the District of Columbia and, if we are not the surviving person, the surviving person has expressly assumed all of our obligations, including the payment of the principal of and, premium, if any, and interest on the debt securities and the performance of the other covenants under the indenture; and

(2) immediately after giving effect to the transaction, no event of default, and no event which, after notice or lapse of time or both, would become an event of default, has occurred and is continuing under the indenture.

Events of Default

Unless otherwise specified in the applicable prospectus supplement, the following events would be events of default under the indenture with respect to debt securities of any series:

(1) we fail to pay any principal of, or premium, if any, when it becomes due;

(2) we fail to pay any interest within 45 days after it becomes due;

(3) we fail to observe or perform any other covenant in the debt securities or the indenture for 45 days after written notice from the trustee or the holders of not less than 25% in aggregate principal amount of the outstanding debt securities of that series; and

(4) certain events occur involving bankruptcy, insolvency or reorganization of Axcelis or any of our significant subsidiaries.

The trustee may withhold notice to the holders of the debt securities of any series of any default, except in payment of principal or premium, if any, or interest on the debt securities of that series, if the trustee considers it to be in the best interest of the holders of the debt securities of that series to do so.

If an event of default (other than an event of default resulting from certain events of bankruptcy, insolvency or reorganization) occurs, and is continuing, then the trustee or the holders of not less than 25% in aggregate principal amount of the outstanding debt securities of any series may accelerate the maturity of the debt securities.

If this happens, the entire principal amount of all the outstanding debt securities of that series plus accrued interest to the date of acceleration would be immediately due and payable. At any time after an acceleration, but before a judgment or decree based on the acceleration is obtained by the trustee, the holders of a majority in aggregate principal amount of outstanding debt securities of that series may rescind and annul the

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acceleration if (1) all events of default (other than nonpayment of accelerated principal, premium or interest) have been cured or waived, (2) all overdue interest and overdue principal has been paid and (3) the rescission would not conflict with any judgment or decree.

If an event of default resulting from certain events of bankruptcy, insolvency or reorganization occurs, the principal, premium and interest amount with respect to all of the debt securities of any series shall be due and payable immediately without any declaration or other act on the part of the trustee or the holders of the debt securities of that series.

The holders of a majority in principal amount of the outstanding debt securities of a series shall have the right to waive any existing default or compliance with any provision of the indenture or the debt securities of that series and to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, subject to certain limitations specified in the indenture.

No holder of any debt security of a series would have any right to institute any proceeding with respect to the indenture or for any remedy under the indenture, unless:

(1) the holder gives to the trustee written notice of a continuing event of default;

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(2) the holders of at least 25% in aggregate principal amount of the outstanding debt securities of that series make a written request and offer reasonable indemnity to the trustee to institute proceeding as a trustee;

(3) the trustee fails to institute proceeding within 60 days of the request; and

(4) the holders of a majority in aggregate principal amount of the outstanding debt securities of that series do not give the trustee a direction inconsistent with their request during the 60-day period.

However, these limitations do not apply to a suit instituted for payment on debt securities of any series on or after the due dates expressed in the debt securities.

Modification and Waiver

From time to time, we and the trustee may, without the consent of holders of the debt securities of one or more series, amend the indenture or the debt securities of one or more series, or supplement the indenture, for certain specified purposes, including:

(1) to provide that the surviving entity following a change of control of Axcelis permitted under the indenture shall assume all of our obligations under the indenture and debt securities;

(2) to provide for uncertificated debt securities in addition to certificated debt securities;

(3) to comply with any requirements of the SEC under the Trust Indenture Act of 1939;

(4) to cure any ambiguity, defect or inconsistency, or make any other change that does not adversely affect the rights of any holder;

(5) provide for the issuance of and establish the form and terms and conditions of debt securities of any series as permitted by the indenture; and

(6) to appoint a successor trustee under the indenture with respect to one or more series.

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From time to time we and the trustee may, with the consent of holders of at least a majority in principal amount of the outstanding debt securities, amend or supplement the indenture or the debt securities, or waive compliance in a particular instance by us with any provision of the indenture or the debt securities; but without the consent of each holder affected by the action, we may not modify or supplement the indenture or the debt securities or waive compliance with any provision of the indenture or the debt securities in order to:

(1) reduce the amount of debt securities whose holders must consent to an amendment, supplement, or waiver to the indenture or the debt security;

(2) reduce the rate of or change the time for payment of interest;

(3) reduce the principal of or premium on or change the stated maturity or postpone the payment date of any sinking fund or analogous obligation;

(4) make any debt security payable in money other than that stated in the debt security;

(5) change the amount or time of any payment required or reduce the premium payable upon any redemption, or change the time before which no redemption of this type may be made;

(6) waive a default on the payment of the principal of, interest on, or redemption payment (except if acceleration of any series has been rescinded and the resulting payment default was waived by the holders of a majority in principal amount of that series); and

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(7) take any other action otherwise prohibited by the indenture to be taken without the consent of each holder affected by that action.

Defeasance and Discharge of Debt Securities and Certain Covenants in Certain Circumstances

The indenture permits us, at any time, to elect to discharge our obligations with respect to one or more series of debt securities by following certain procedures described in the indenture. These procedures would allow us either:

(1) to defease and be discharged from any and all of our obligations with respect to any debt securities except for the following obligations (which discharge is referred to as "legal defeasance"):

(a) to register the transfer or exchange of the debt securities;

(b) to replace temporary or mutilated, destroyed, lost or stolen debt securities;

(c) to compensate and indemnify the trustee; or

(d) to maintain an office or agency in respect of the debt securities and to hold monies for payment in trust; or

(2) to be released from our obligations with respect to the debt securities under certain covenants contained in the indenture, as well as any additional covenants which may be contained in the applicable prospectus supplement (which release is referred to as "covenant defeasance").

In order to exercise either defeasance option, we must deposit with the trustee or other qualifying trustee, in trust for this purpose:

(1) money;

(2) U.S. Government Obligations (as described below) or Foreign Government Obligations (as described below) which through the scheduled payment of principal and interest in accordance with their terms will provide money; or

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(3) a combination of money and/or U.S. Government Obligations and/or Foreign Government Obligations sufficient in the written opinion of a nationally-recognized firm of independent accountants to provide money;

which in each case specified in clauses (1) through (3) above, provides a sufficient amount to pay the principal of, premium, if any, and interest, if any, on the debt securities of a series, on the scheduled due dates or on a selected date of redemption in accordance with the terms of the indenture.

In addition, defeasance may be effected only if, among other things:

(1) in the case of either legal or covenant defeasance, we deliver to the trustee an opinion of counsel, as specified in the indenture, stating that as a result of the defeasance neither the trust nor the trustee will be required to register as an investment company under the Investment Company Act of 1940;

(2) in the case of legal defeasance, we deliver to the trustee an opinion of counsel stating that we have received from, or there has been published by, the Internal Revenue Service a ruling to the effect that, or there has been a change in any applicable federal income tax law with the effect that, and the opinion shall confirm that, the holders of outstanding debt securities will not recognize income, gain or loss for United States federal income tax purposes solely as a result of the legal defeasance and will be subject to United States federal income tax on the same amounts, in the same manner, including as a result of prepayment, and at the same times as would have been the case if a defeasance had not occurred;

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(3) in the case of covenant defeasance, we deliver to the trustee an opinion of counsel to the effect that the holders of the outstanding debt securities will not recognize income, gain or loss for United States federal income tax purposes as a result of the covenant defeasance and will be subject to United States federal income tax on the same amounts, in the same manner and at the same times as would have been the case if a covenant defeasance had not occurred; and

(4) certain other conditions described in the indenture are satisfied.

If we fail to comply with our remaining obligations under the indenture and applicable supplemental indenture after a covenant defeasance of the indenture and applicable supplemental indenture, and the debt securities are declared due and payable because of the occurrence of any undefeased event of default, the amount of money and/or U.S. Government Obligations and/or Foreign Government Obligations on deposit with the trustee could be insufficient to pay amounts due under the debt securities of that series at the time of acceleration. We would, however, remain liable in respect of these payments.

The term "U.S. Government Obligations" as used in the above discussion means securities which are direct obligations of or non-callable obligations guaranteed by the United States of America for the payment of which obligation or guarantee the full faith and credit of the United States of America is pledged.

The term "Foreign Government Obligations" as used in the above discussion means, with respect to debt securities of any series that are denominated in a currency other than U.S. dollars (1) direct obligations of the government that issued or caused to be issued the currency for the payment of which obligations its full faith and credit is pledged or (2) obligations of a person controlled or supervised by or acting as an agent or instrumentality of that government the timely payment of which is unconditionally guaranteed as a full faith and credit obligation by that government, which in either case under clauses (1) or (2), are not callable or redeemable at the option of the issuer.

Regarding the Trustee

We would identify the trustee with respect to any series of debt securities in the prospectus supplement relating to the debt securities. You should note that if the trustee becomes a creditor of Axcelis, the indenture and the Trust Indenture Act of 1939 limit the rights of the trustee to obtain payment of claims in certain cases, or to realize on certain property received in respect of certain claims, as security or otherwise. The trustee and its affiliates may engage in, and would be permitted to engage in, other transactions with us and our affiliates. If, however, the trustee, acquires any conflicting interest within the meaning of the Trust Indenture Act of 1939, it must eliminate the conflict or resign.

The holders of a majority in principal amount of the then outstanding debt securities of any series may direct the time, method and place of conducting any proceeding for exercising any remedy available to the trustee. If an event of default occurs and is continuing, the trustee, in the exercise of its rights and powers, must use the degree of care and skill of a prudent person in the conduct of his or her own affairs. Subject to this provision, the trustee would be under no obligation to exercise any of its rights or powers under the indenture at the request of any of the holders of the debt securities, unless they have offered to the trustee reasonable indemnity or security.

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DESCRIPTION OF WARRANTS

General

We may issue warrants to purchase debt securities (which we refer to as debt warrants), preferred stock (which we refer to as preferred stock warrants) or common stock (which we refer to as common stock warrants). Any of these warrants may be issued independently or together with any other securities offered by this prospectus and may be attached to or separate from the other securities. If warrants are issued, they would be issued under warrant agreements to be entered into between us and a bank or trust company, as warrant agent, all of which would be described in the prospectus supplement relating to the warrants being offered.

Debt Warrants

We would describe the terms of debt warrants offered in the applicable prospectus supplement, the warrant agreement relating to the debt warrants and the debt warrant certificates representing the debt warrants, including the following:

(1) the title;

(2) the aggregate number offered;

(3) their issue price or prices;

(4) the designation, aggregate principal amount and terms of the debt securities purchasable upon exercise, and the procedures and conditions relating to exercise;

(5) the designation and terms of any related debt securities and the number of debt warrants issued with each security;

(6) the date, if any, on and after which the debt warrants and the related debt securities will be separately transferable;

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(7) the principal amount of debt securities purchasable upon exercise, and the price at which that principal amount of debt securities may be purchased upon exercise;

(8) the commencement and expiration dates of the right to exercise;

(9) the maximum or minimum number which may be exercised at any time;

(10) a discussion of the material United States federal income tax considerations applicable to exercise; and

(11) any other terms, procedures and limitations relating to exercise.

Debt warrant certificates would be exchangeable for new debt warrant certificates of different denominations, and debt warrants may be exercised at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement. Before exercising their debt warrants, holders would not have any of the rights of holders of the securities purchasable upon exercise and would not be entitled to payments of principal of, or premium, if any, or interest, if any, on the securities purchasable upon exercise.

Other Warrants

The applicable prospectus supplement would describe, where applicable, the following terms and other information relating to the preferred stock warrants or common stock warrants offered under this prospectus:

(1) the title;

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- (2) the securities issuable upon exercise;
- (3) the issue price or prices;
- (4) the number of warrants issued with each share of preferred stock or common stock;
- (5) any provisions for adjustment of (a) the number or amount of shares of preferred stock or common stock receivable upon exercise of the warrants or (b) the exercise price;
- (6) if applicable, the date on and after which the warrants and the related preferred stock or common stock will be separately transferable;
- (7) if applicable, a discussion of the material United States federal income tax considerations applicable to the exercise of the warrants;
- (8) any other terms, including terms, procedures and limitations relating to exchange and exercise;
- (9) the commencement and expiration dates of the right to exercise; and
- (10) the maximum or minimum number that may be exercised at any time.

Exercise of Warrants

Each warrant would entitle the holder to purchase for cash the principal amount of debt securities or shares of preferred stock or common stock at the applicable exercise price set forth in, or determined as described in, the applicable prospectus supplement. Warrants may be exercised at any time up to the close of business on the expiration date set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants would become void.

Warrants may be exercised by delivering to the corporation trust office of the warrant agent or any other officer indicated in the applicable prospectus supplement (a) the warrant certificate properly completed and duly executed and (b) payment of the amount due upon exercise. As soon as practicable following exercise, we would forward the debt securities or shares of preferred stock or common stock purchasable upon exercise. If less than all of the warrants represented by a warrant certificate are exercised, a new warrant certificate would be issued for the

remaining warrants.

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DESCRIPTION OF UNITS

The following description, together with the additional information we may include in any applicable prospectus supplements, summarizes the material terms and provisions of the units that we may offer under this prospectus. Units may be offered independently or together with common stock, preferred stock, debt securities and/or warrants offered by any prospectus supplement, and may be attached to or separate from those securities. While the terms we have summarized below would apply generally to any units that we may offer under this prospectus, we would describe the particular terms of any series of units in more detail in the applicable prospectus supplement. The terms of any units offered under a prospectus supplement may differ from the terms described below. However, no prospectus supplement would fundamentally change the terms that are set forth in this prospectus or offer a security that is not registered and described in this prospectus at the time of its effectiveness.

We would issue the units under a unit agreement between us and a unit agent to be specified therein, if any. We use the term "unit agreement" to refer to any of these unit agreements.

We would file as exhibits to the registration statement of which this prospectus is a part, or would incorporate by reference from a current report on Form 8-K that we file with the SEC, the form of unit agreement that describes the terms of the series of units we are offering, and any supplemental agreements, before the issuance of the related series of units. The following summaries of material terms and provisions of the units are subject to, and qualified in their entirety by reference to, all the provisions of the unit agreement and any supplemental agreements applicable to a particular series of units. We urge you to read the applicable prospectus supplements related to the particular series of units that we sell under this prospectus, as well as the complete unit agreement and any supplemental agreements that contain the terms of the units.

General

We may issue units comprised of one or more debt securities, shares of common stock, shares of preferred stock and warrants in any combination. Each unit would be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit would have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date.

We would describe in the applicable prospectus supplement the terms of the series of units, including:

- the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;
- any provisions of the governing unit agreement that differ from those described below; and

- any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those described under *Description of Capital Stock*, *Description of Debt Securities* and *Description of Warrants* would apply to each unit and to any common stock, preferred stock, debt security or warrant included in each unit, respectively.

Issuance in Series

We may issue units in such amounts and in numerous distinct series as we determine.

Enforceability of Rights by Holders of Units

Each unit agent would act solely as our agent under the applicable unit agreement and would not assume any obligation or relationship of agency or trust with any holder of any unit. A single bank or trust company may act as unit agent for more than one series of units. A unit agent would have no duty or responsibility in case of any default

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by us under the applicable unit agreement or unit, including any duty or responsibility to initiate any proceedings at law or otherwise, or to make any demand upon us. Any holder of a unit may, without the consent of the related unit agent or the holder of any other unit, enforce by appropriate legal action its rights as holder under any security included in the unit.

Title

Axcelis, the unit agent and any of their agents may treat the registered holder of any unit certificate as an absolute owner of the units evidenced by that certificate for any purposes and as the person entitled to exercise the rights attaching to the units so requested, despite any notice to the contrary.

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PLAN OF DISTRIBUTION

We may sell the securities being offered by us in this prospectus:

- (1) directly to purchasers;
- (2) through agents;
- (3) through dealers;
- (4) through underwriters; or
- (5) through a combination of any of these methods of sale.

We and our agents and underwriters may sell the securities being offered by us in this prospectus from time to time in one or more transactions:

- (1) at a fixed price or prices, which may be changed;
- (2) at market prices prevailing at the time of sale;
- (3) at prices related to the prevailing market prices; or
- (4) at negotiated prices.

Direct Sales Through Agents

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We may solicit directly offers to purchase securities. We may also designate agents from time to time to solicit offers to purchase securities. Any agent, who may be deemed to be an underwriter as that term is defined in the Securities Act of 1933, may then resell the securities to the public at varying prices to be determined by that agent at the time of resale.

Sales Through Underwriters or Dealers

If we use underwriters to sell securities, we would enter into an underwriting agreement with them at the time of the sale to them. The names of the underwriters would be set forth in the prospectus supplement that would be used by them together with this prospectus to make resales of the securities to the public. In connection with the sale of the securities offered, these underwriters may be deemed to have received compensation from us in the form of underwriting discounts or commissions. Underwriters may also receive commissions from purchasers of the securities.

Underwriters may also use dealers to sell securities. If this happens, these dealers may receive compensation in the form of discounts, concessions or commissions from the underwriters and/or commissions from the purchasers for whom they may act as agents.

Any underwriting compensation paid by us to underwriters in connection with the offering of the securities offered in this prospectus, and any discounts, concessions or commissions allowed by underwriters to participating dealers, would be set forth in the applicable prospectus supplement. In no event would the total amount of compensation paid to any member of The Financial Industry Regulatory Authority (FINRA) upon completion of any offering exceed 8.0% of the maximum gross proceeds of such offering.

Underwriters, dealers, agents and other persons may be entitled, under agreements that may be entered into with us, to indemnification by us against certain civil liabilities, including liabilities under the Securities Act of 1933, or to contribution with respect to payments that they may be required to make in respect of these liabilities.

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Underwriters and agents may engage in transactions with, or perform services for, us in the ordinary course of business.

If so indicated in the applicable prospectus supplement, we would authorize underwriters, dealers, or other persons to solicit offers by certain institutions to purchase the securities offered by us under this prospectus pursuant to contracts providing for payment and delivery on a future date or dates. The obligations of any purchaser under any of these contracts would be subject only to those conditions described in the applicable prospectus supplement, and the prospectus supplement would set forth the price to be paid for securities pursuant to these contracts and the commissions payable for solicitation of these contracts.

Any underwriter may engage in over-allotment, stabilizing and syndicate short covering transactions and penalty bids only in compliance with Regulation M of the Securities Exchange Act of 1934. If we offer securities in an at the market offering, stabilizing transactions would not be permitted. Over-allotment involves sales in excess of the offering size, which creates a short position. Stabilizing transactions involve bids to purchase the underlying security so long as the stabilizing bids do not exceed a specified maximum. Syndicate short covering transactions involve purchases of securities in the open market after the distribution has been completed in order to cover syndicate short positions. Penalty bids permit the underwriters to reclaim selling concessions from dealers when the securities originally sold by the dealers are purchased in covering transactions to cover syndicate short positions. These transactions may cause the price of the securities sold in an offering to be higher than it would otherwise be. These transactions, if commenced, may be discontinued by the underwriters at any time.

Rights Offerings

We may offer rights to our existing stockholders to purchase additional common shares of ours. For any particular subscription rights, the applicable prospectus supplement would describe the terms of such rights, including the period during which such rights may be exercised, the manner of exercising such rights, the transferability of such rights and the number of common shares that may be purchased in connection with each right and the subscription price for the purchase of such common shares. In connection with a rights offering, we may enter into a separate agreement with one or more underwriters or standby purchasers to purchase any of our common shares not subscribed for in the rights offering by existing stockholders, which would be described in the applicable prospectus supplement.

General Information

Each series of securities offered under this prospectus would be a new issue with no established trading market, other than the common stock, which is listed on The Nasdaq Global Select Market. Any shares of common stock sold pursuant to a prospectus supplement would be listed on The Nasdaq Global Select Market, subject to official notice of issuance. Any underwriters to whom we sell securities for public offering and sale may make a market in the securities, but these underwriters would not be obligated to do so and may discontinue any market making at any time without notice. We may elect to list any of the securities we may offer from time to time for trading on an exchange or on The Nasdaq Global Select Market, but we are not obligated to do so.

The anticipated date of delivery of the securities offered hereby would be set forth in the applicable prospectus supplement relating to each offering.

LEGAL MATTERS

The validity of the securities offered hereby will be passed upon by Locke Lord LLP, Boston, Massachusetts, our counsel. The validity of any securities will be passed upon for any underwriters or agents by counsel that we will name in the applicable prospectus supplement.

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EXPERTS

The consolidated financial statements of Axcelis Technologies, Inc. appearing in Axcelis Technologies, Inc.'s Annual Report (Form 10-K) for the year ended December 31, 2016 (including the schedule appearing therein), and the effectiveness of Axcelis Technologies, Inc.'s internal control over financial reporting as of December 31, 2016 have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their reports thereon, included therein, and incorporated herein by reference. Such consolidated financial statements are incorporated herein by reference in reliance upon such reports given on the authority of such firm as experts in accounting and auditing.

WHERE YOU CAN FIND MORE INFORMATION

We file annual, quarterly and special reports, proxy statements and other information with the SEC. Our internet website is www.axcelis.com and through the Investors section of our website, you may access, free of charge, our filings, as soon as reasonably practicable after we electronically file such materials with, or furnish them to, the SEC. The information contained in our website is not incorporated by reference into this prospectus and does not constitute a part of this prospectus. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 20549. Copies of all or a portion of such materials can be obtained from the Public Reference Section of the SEC upon payment of prescribed fees. Please call the SEC at 1-800-SEC-0330 for further information. Our SEC filings are also available to the public at the SEC's web site at <http://www.sec.gov>. Our common stock is listed on The NASDAQ Global Select Market. Reports and other information concerning us can be inspected at the offices of The NASDAQ Global Select Market.

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INCORPORATION BY REFERENCE

The SEC allows us to incorporate by reference the information we have filed with them, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is deemed to be a part of this prospectus. The reports and other documents we file after the date of this prospectus will update, supplement and supersede the information in this prospectus. We incorporate by reference the documents listed below and any documents we file later with the SEC under Section 13(a), 13(c), 14, or 15(d) of the Exchange Act after the date of the initial registration statement and before the effectiveness of the registration statement and after the date of the prospectus and before the termination of the offering; *provided, however*, that we are not incorporating any information furnished under Item 2.02 or Item 7.01 of any Current Report on Form 8-K.

- our Annual Report on Form 10-K for the fiscal year ended December 31, 2016, filed with the SEC on March 14, 2017;
- our Current Report on Form 8-K filed with the SEC on February 21, 2017;
- The description of the common stock contained in our Amended and Restated Certificate of Incorporation filed with our Registration Statement on Form S-1 (Registration No. 333-36330), including any further amendment or report filed hereafter for the purpose of updating such description.

We will provide without charge to each person, including any beneficial owner to whom this prospectus is delivered, upon written or oral request, a copy of any document incorporated by reference in this prospectus. Requests for such documents should be directed to:

Investor Relations
108 Cherry Hill Drive
Beverly, Massachusetts 01915
(978) 787-4000

Table of Contents**PART II****INFORMATION NOT REQUIRED IN PROSPECTUS****Item 14. Other Expenses of Issuance and Distribution**

The expenses in connection with the securities being registered are as follows:

SEC registration fee	\$ 8,693
Accounting fees and expenses	\$ 100,000
Legal fees and expenses	\$ 100,000
Printing and photocopying expenses	\$ 8,000
Miscellaneous expenses (including any applicable listing fees, rating agency fees, trustee and transfer agent fees and expenses)	\$ 20,307
TOTAL	\$ 237,000

All of the above figures, except the SEC registration fee, are estimates.

Item 15. Indemnification of Directors and Officers

Section 145 of the Delaware General Corporation Law (DGCL) allows us to indemnify our directors, officers, employees and agents against actual and reasonable expenses they incur in connection with any action, suit or proceeding brought against them because they are a director, officer, employee or agent. Under Delaware law, we may pay all these expenses, provided that: (1) the person in question acted in good faith and in a manner reasonably believed to be not opposed to our best interests; and (2) in the case of a criminal proceeding, the person had no reasonable cause to believe the conduct in question was unlawful. We shall make no indemnification in connection with any proceeding brought on our behalf where the person involved is adjudged to be liable to us, except as may be ordered by a court.

Article THIRD of our Amended and Restated Certificate of Incorporation provides that we shall, to the fullest extent permitted by Section 145 of the DGCL, indemnify any person who was or is made or is threatened to be made a party or is otherwise involved in any action, suit or proceeding, whether civil, criminal, administrative or investigative by reason of the fact that such person, or a person for whom he or she is the legal representative, is or was a director, officer, employee or agent of Axcelis or is or was serving at the request of Axcelis as a director, officer, employee or agent of another corporation or of a partnership, joint venture, trust, enterprise or non-profit entity against all liability and loss suffered and expenses reasonably incurred by such person. Such right shall not be exclusive of any other rights to which those seeking indemnification may otherwise be entitled.

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Article THIRD further provides that no director shall be personally liable to us or our stockholders for monetary damages for any breach of fiduciary duty by a director as a director except for liability (i) for any breach of the director's duty of loyalty to Axcelis or its stockholders, (ii) for acts or omissions not in good faith or which involve intentional misconduct or a knowing violation of law, (iii) pursuant to Section 174 of the DGCL, or (iv) for any transaction from which the director derived an improper personal benefit.

Article THIRD further states that if the DGCL is amended to allow further limitation of the liability of our directors or officers, then the liability of those directors or officers shall be limited to the fullest extent permitted by the DGCL, as from time to time amended.

We carry insurance that covers our directors and officers against some liabilities they may incur when acting in their official capacities.

Item 16. Exhibits

See the Exhibit Index immediately following the signature page hereto.

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Item 17. Undertakings

(a) The undersigned registrant hereby undertakes as follows:

(1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement:

(i) To include any prospectus required by Section 10(a)(3) of the Securities Act of 1933;

(ii) To reflect in the prospectus any facts or events arising after the effective date of this Registration Statement (or the most recent post-effective amendment thereof) which, individually or in the aggregate, represent a fundamental change in the information set forth in this Registration Statement. Notwithstanding the foregoing, any increase or decrease in volume of securities offered (if the total dollar value of securities offered would not exceed that which was registered) and any deviation from the low or high end of the estimated maximum offering range may be reflected in the form of prospectus filed with the Commission pursuant to Rule 424(b) if, in the aggregate, the changes in volume and price represent no more than 20% change in the maximum aggregate offering price set forth in the Calculation of Registration Fee table in the effective registration statement;

(iii) To include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in this Registration Statement;

Provided, however, that paragraphs (a)(1)(i), (a)(1)(ii) and (a)(1)(iii) of this section do not apply if the registration statement is on Form S-3, Form S-8 or Form F-3, and the information required to be included in a post-effective amendment by those paragraphs is contained in periodic reports filed with or furnished to the Commission by the Registrant pursuant to Section 13 or 15(d) of the Securities Exchange Act of 1934 that are incorporated by reference in this Registration Statement, or is contained in a form of prospectus filed pursuant to Rule 424(b) that is part of this Registration Statement.

(2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

(3) To remove from registration by means of a post-effective amendment any of the securities being registered which remain unsold at the termination of this offering.

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(4) That, for the purpose of determining liability under the Securities Act of 1933 to any purchaser:

(i) Each prospectus filed by the registrant pursuant to Rule 424(b)(3) shall be deemed to be part of the registration statement as of the date the filed prospectus was deemed part of and included in the registration statement; and

(ii) Each prospectus required to be filed pursuant to Rule 424(b)(2), (b)(5), or (b)(7) as part of a registration statement in reliance on Rule 430B relating to an offering made pursuant to Rule 415(a)(1)(i), (vii), or (x) for the purpose of providing the information required by section 10(a) of the Securities Act of 1933 shall be deemed to be part of and included in the registration statement as of the earlier of the date such form of prospectus is first used after effectiveness or the date of the first contract of sale of securities in the offering described in the prospectus. As provided in Rule 430B, for liability purposes of the issuer and any person that is at that date an underwriter, such date shall be deemed to be a new effective date of the registration statement relating to the securities in the registration statement to which that prospectus relates, and the offering of such securities at that time shall be deemed to be the initial bona fide offering

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thereof. Provided, however, that no statement made in a registration statement or prospectus that is part of the registration statement or made in a document incorporated or deemed incorporated by reference into the registration statement or prospectus that is part of the registration statement will, as to a purchaser with a time of contract of sale prior to such effective date, supersede or modify any statement that was made in the registration statement or prospectus that was part of the registration statement or made in any such document immediately prior to such effective date.

(5) That, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities: The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

(b) The undersigned hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to section 13(a) or section 15(d) of the Exchange Act of 1934 that is incorporated by reference in this Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial *bona fide* offering thereof.

(c) The undersigned registrant hereby undertakes to supplement the prospectus, after the expiration of the subscription period, to set forth the results of the subscription offer, the transactions by the underwriters during the subscription period, the amount of unsubscribed securities to be purchased by the underwriters, and the terms of any subsequent reoffering thereof. If any public offering by the underwriters is to be made on terms differing from those set forth on the cover page of the prospectus, a post-effective amendment will be filed to set forth the terms of such offering.

(d) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director,

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officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

(e) The undersigned hereby undertakes to file an application for the purpose of determining the eligibility of the trustee to act under subsection (a) of Section 310 of the Trust Indenture Act (the Act) in accordance with the rules and regulations prescribed by the Securities and Exchange Commission under Section 305(b)(2) of the Act.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of Beverly, Commonwealth of Massachusetts, on April 7, 2017.

AXCELIS TECHNOLOGIES, INC.

By: /s/ Mary G. Puma
Mary G. Puma
Chief Executive Officer and President

POWER OF ATTORNEY

We, the undersigned officers and directors of Axcelis Technologies, Inc., hereby severally constitute and appoint Mary G. Puma, Kevin J. Brewer and Lynnette C. Fallon, and each of them singly, our true and lawful attorneys-in-fact and agents, with full power of substitution to them in any and all capacities, to sign and file any and all amendments to this registration statement on Form S-3 (including pre- and post-effective amendments), and any related Rule 462 registration statement or amendment thereto, and to file the same, with exhibits thereto and other documents in connection therewith, with the Securities and Exchange Commission, hereby ratifying and confirming all that each of said attorneys-in-fact may do or cause to be done by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this registration statement has been signed below by the following persons in the capacities and on the dates indicated.

Signature	Title	Date
/s/ Mary G. Puma Mary G. Puma	Chief Executive Officer and President (principal executive officer) and Director	April 7, 2017
/s/ Kevin J. Brewer Kevin J. Brewer	Executive Vice President and Chief Financial Officer (principal accounting and financial officer)	April 7, 2017
/s/ Richard J. Faubert Richard J. Faubert	Director	April 7, 2017
/s/ R. John Fletcher R. John Fletcher	Director	April 7, 2017

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/s/ Arthur L. George, Jr. Arthur L. George, Jr.	Director	April 7, 2017
/s/ Joseph P. Keithley Joseph P. Keithley	Director	April 7, 2017
/s/ John T. Kurtzweil John T. Kurtzweil	Director	April 7, 2017
/s/ Patrick H. Nettles Patrick H. Nettles	Director	April 7, 2017
/s/ Thomas St. Dennis Thomas St. Dennis	Director	April 7, 2017

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EXHIBIT INDEX

Exhibit Number	Description
1.1*	Form of Underwriting Agreement.
4.1	Form of Indenture.
4.2*	Specimen Preferred Stock Certificate and Form of Certificate of Designation of Preferred Stock.
4.3*	Form of Note.
4.4*	Form of Warrant.
4.5*	Form of Warrant Agreement.
4.6*	Form of Subscription Agreement for Rights Offering.
4.7*	Form of Unit Agreement.
5.1	Opinion of Locke Lord LLP.
12.1	Computation of Ratio of Earnings to Fixed Charges.
23.1	Consent of Ernst & Young LLP, an independent registered public accounting firm.
23.2	Consent of Locke Lord LLP (contained in Opinion of Locke Lord LLP filed as Exhibit 5.1).
25.1*	Statement of Eligibility of Trustee under the Indenture on Form T-1. To be filed separately pursuant to Section 305(b)(2) of the Trust Indenture Act of 1939.

*To be filed by amendment or as an exhibit to a Current Report of the Registrant on Form 8-K and incorporated by reference herein, if applicable.
