

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT
Pursuant to Section 13 OR 15(d)
of The Securities Exchange Act of 1934

Date of Report (Date of earliest event reported): **February 25, 2008**

Axcelis Technologies, Inc.

(Exact name of registrant as specified in its charter)

Delaware
(State or other jurisdiction
of incorporation)

000-30941
(Commission
File Number)

34-1818596
(IRS Employer
Identification No.)

108 Cherry Hill Drive, Beverly,
Massachusetts
(Address of principal executive offices)

01915
(Zip Code)

Registrant's telephone number, including area code: **(978) 787-4000**

(Former name or former address, if changed since last report.)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
- Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
- Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
- Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

Item 7.01. Regulation FD Disclosure.

(a) Investor Presentation. Axcelis Technologies, Inc. hereby furnishes as Exhibit 99.1 to this Form 8-K a copy of its investor presentation dated February 25, 2008.

(b) Employee Memorandum. On February 25, 2008, Mary Puma, Chairman and Chief Executive Officer of Axcelis Technologies, Inc., distributed a memorandum to the employees of Axcelis regarding the Board of Directors' review and evaluation of the unsolicited proposal to acquire Axcelis made by Sumitomo Heavy Industries, Ltd. on February 11, 2008. A copy of the memorandum is furnished as Exhibit 99.2 to this Form 8-K.

Exhibits 99.1 and 99.2 shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), or otherwise subject to the liabilities under that Section and shall not be deemed to be incorporated by reference into any filing of the Company under the Securities Act of 1933, as amended, or the Exchange Act.

Item 8.01. Other Events.

Axcelis Technologies, Inc. issued a press release on February 25, 2008 in response to the unsolicited proposal to acquire Axcelis made by Sumitomo Heavy Industries, Ltd. on February 11, 2008.

A copy of the press release is filed as Exhibit 99.3 to this Current Report on Form 8-K and is incorporated herein by reference.

Item 9.01 Financial Statements and Exhibits.

(d) Exhibits

Exhibit
No.

Description

- 99.1 Axcelis Technologies, Inc. investor presentation dated February 25, 2008
- 99.2 Memorandum from the Chairman and Chief Executive Officer to Axcelis Technologies, Inc. employees dated February 25, 2008
- 99.3 Axcelis Technologies, Inc. press release dated February 25, 2008

Forward-Looking Statements

This Current Report on Form 8-K and its exhibits contain statements about Axcelis' strategic and operational plans and potential financial performance. These are forward-looking statements that involve risks and uncertainties. Actual events or results may differ materially from those described in the forward-looking statements due to a number of important factors involving risks and uncertainties. The potential risks and uncertainties include, but are not limited to: the impact of the cyclical nature of the semiconductor industry, Axcelis' ability to keep pace with rapid technological changes in the semiconductor manufacturing processes, the impact of the highly competitive nature of the semiconductor equipment industry, quarterly fluctuations in operating results attributable to the timing and amount of orders for our products and services, and Axcelis' dependence on SEN (Axcelis' Japanese joint venture) for access to the Japanese semiconductor equipment market. Further risks and uncertainties associated with Sumitomo Heavy Industries' unsolicited proposal to acquire Axcelis include: the risk that key employees may leave for other employment opportunities due to concerns for their employment security with Axcelis, the risk of creating uncertainty and disruption in customers' purchasing plans, the risk that the acquisition proposal will make it more difficult for Axcelis to execute its strategic plan and pursue other strategic opportunities, and the risk that stockholder litigation in connection with Sumitomo Heavy Industries' unsolicited proposal may result in significant costs of defense, indemnification and liability. If any of those or other risks or uncertainties materializes, Axcelis' business, financial condition and results of operations could be seriously harmed and the trading price of its common stock could decline. More information about potential factors that could affect Axcelis' business and financial results is included under the captions "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the Company's Annual Report on Form 10-K for the year ended December 31, 2006 and the Quarterly Report on Form 10-Q for the quarter ended September 30, 2007, which are on file with the SEC and available at the SEC's website at www.sec.gov. All forward-looking statements are qualified by these cautionary statements and are made only as of the date they are made. The Company is under no obligation (and expressly disclaims any such obligation) to update or alter any forward-looking statements, whether as a result of new information, future events or otherwise.

SIGNATURE

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 hereunto duly authorized.

Date: February 25, 2008

Axcelis Technologies, Inc.

By: /s/ STEPHEN G. BASSETT

Stephen G. Bassett
Executive Vice President
and Chief Financial Officer

Exhibit No.	Exhibit Index
99.1	Axcelis Technologies, Inc. investor presentation dated February 25, 2008
99.2	Memorandum from the Chairman and Chief Executive Officer to Axcelis Technologies, Inc. employees dated February 25, 2008
99.3	Axcelis Technologies, Inc. press release dated February 25, 2008



Axcelis Technologies

***Response to Unsolicited Offer
from Sumitomo Heavy and TPG***

February 25, 2008

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Safe Harbor Statement

These materials contain statements about Axcelis' strategic and operational plans and potential financial performance. These are forward-looking statements that involve risks and uncertainties. Actual events or results may differ materially from those described in the forward-looking statements due to a number of important factors involving risks and uncertainties. The potential risks and uncertainties include, but are not limited to: the impact of the cyclical nature of the semiconductor industry, Axcelis' ability to keep pace with rapid technological changes in the semiconductor manufacturing processes, the impact of the highly competitive nature of the semiconductor equipment industry, quarterly fluctuations in operating results attributable to the timing and amount of orders for our products and services, and Axcelis' dependence on SEN (Axcelis' Japanese joint venture) for access to the Japanese semiconductor equipment market. Further risks and uncertainties associated with Sumitomo Heavy Industries' unsolicited proposal to acquire Axcelis include: the risk that key employees may leave for other employment opportunities due to concerns for their employment security with Axcelis, the risk of creating uncertainty and disruption in customers' purchasing plans, the risk that the acquisition proposal will make it more difficult for Axcelis to execute its strategic plan and pursue other strategic opportunities, and the risk that stockholder litigation in connection with Sumitomo Heavy Industries' unsolicited proposal may result in significant costs of defense, indemnification and liability. If any of those or other risks or uncertainties materializes, Axcelis' business, financial condition and results of operations could be seriously harmed and the trading price of its common stock could decline. More information about potential factors that could affect Axcelis' business and financial results is included under the captions "Risk Factors" and "Management's Discussion and Analysis of Financial Condition and Results of Operations" in the Company's Annual Report on Form 10-K for the year ended December 31, 2006 and the Quarterly Report on Form 10-Q for the quarter ended September 30, 2007, which are on file with the SEC and available at the SEC's website at www.sec.gov. All forward-looking statements are qualified by these cautionary statements and are made only as of the date they are made. The Company is under no obligation (and expressly disclaims any such obligation) to update or alter any forward-looking statements, whether as a result of new information, future events or otherwise.

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Why are we saying "no" to Sumitomo and TPG?

- The \$5.20/share unsolicited proposal materially discounts the Company's value:
 - Ignores the substantial market opportunity to take share back from competitors
 - Does not compensate shareholders for synergies from combining our JV (SEN)
- This is an opportunistic attempt at putting pressure on the Company to sell under difficult market conditions and at a bargain-basement price
- We are confident in our ability to drive shareholder value well in excess of this offer on a stand alone basis
- The Board regularly evaluates all available strategic opportunities and will continue to do so.

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Axcelis – History with Sumitomo Heavy Industries (“SHI”)

- Axcelis and SHI are 50-50 partners in a 25 year old joint venture based in Japan: SEN, an SHI and Axcelis Company
 - Axcelis licenses implant technology for certain products to SEN for manufacture and sale in Japan
- SHI has repeatedly made attempts to renegotiate the JV arrangement in ways that will be less favorable to Axcelis and its shareholders
- SEN has repeatedly breached certain territorial restrictions imposed by the JV agreements
- Arbitration is ongoing between the two sides
 - In process since September, 2006 with no impact on SEN behavior
- SEN, with SHI’s encouragement, is breaching sales and marketing agreements and damaging customer relationships, while at the same time SHI is making an unsolicited offer to try to benefit from temporary weakness in our position

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Significant Potential Upside in Axcelis New Products Close to Realization

- Opportunity to gain significant ion implant market share in the future
 - Differentiated technology and proven performance, particularly for advanced applications
 - Customers seeking alternative ion implant provider
- In Q1 2008, Axcelis will recognize, for the first time, revenues from Optima HD products
- Made progress in winning orders at leading memory customers
- Engaged with major logic and foundry customers



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Significant Potential Upside in Axcelis Optima HD Line is Gaining Traction with Customers

Segment	Customer	Relationship	Technical Review	Demo	PO*
Memory	Customer 1	✓	✓	✓	✓
	Customer 2	✓	✓	✓	✓
	Customer 3	✓	✓	✓	✓
	Customer 4	✓	✓	✓	✓
	Customer 5	✓	✓	✓	
	Customer 6	✓	✓	✓	
Foundry	Customer 7	✓	✓	✓	✓
	Customer 8	✓	✓	✓	
	Customer 9	✓	✓		
	Customer 10	✓	✓		
Logic	Customer 11	✓	✓	✓	✓
	Customer 12	✓	✓	✓	✓
	Customer 13	✓	✓	✓	
	Customer 14	✓	→		
	Customer 15	✓	→		
	Customer 16	→	→		
	Customer 17	→	→		
	Customer 18	→	→		

Robust Pipeline Will Drive Future Growth

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* May represent multiple units at a particular customer.

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Potential for Growth in Market Share and Earnings

- Market shares can shift dramatically based on changes in manufacturing processes, chip technology advances and SCE competitive portfolios
- Axcelis and Varian have traded the number one spot four times over the last 18 years
- Axcelis has the potential to gain back significant market share over the next few years assuming that Optima HD roadmaps are executed per plan
- Given its fixed cost structure, Axcelis believes it has significant earnings opportunity from gaining market share in the future

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Axcelis – Confident In Our Future

- Offering innovative implant technology and solutions to meet customers' present and future requirements
- Dry strip products, upgrades and services provide business opportunities
- Significant upside in financial model
 - Earnings expansion at modest market share gains
- Current SHI proposal materially undervalues the company
- The Board's response demonstrates its confidence in our future

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Axcelis Technologies

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To: All Axcelis Employees
From: Mary G. Puma
Date: February 25, 2008
Re: Axcelis Response to SHI Proposal

Dear Axcelis Employees,

As you know, our Board of Directors with its financial and legal advisors, have been reviewing the unsolicited proposal that Sumitomo Heavy Industries, Ltd. (SHI) sent to Axcelis, suggesting that SHI acquire all Axcelis common stock for \$5.20 per share. Today, our Board of Directors issued a press release rejecting the proposal. **Attached is a copy of the press release.**

In sum, our Board of Directors concluded that the unsolicited proposal substantially undervalues Axcelis and is not in the best interests of Axcelis shareholders. The Board reiterated its confidence in the long-term potential of our company and our prospects for reclaiming market share and creating value for shareholders. The Board's priority and focus continues to be to realize this long-term value driven by the innovative products, customer relationships and operational excellence that Axcelis employees have developed.

SHI may respond to our Board with an increased price, or not respond at all or for some time. Some of our shareholders may publicly comment on the Board's decision, either in support or not. These events are all part of being a public company. It is our Board's job to address these events in the best interests of the Company and all shareholders. The Board wants you to be assured that they will do so. The most important thing you can do to assist Axcelis and our achievement of our shared long term goals is to stay focused on your responsibilities and not be distracted by these events.

Again, if you receive inquiries on the SHI matter from customers, vendors, business partners, or media we ask you to direct them to the attached press release, which incorporates all there is say on this matter at this time. If you have any concerns, please contact Lynnette Fallon, our EVP HR/Legal and General Counsel (978-787-4120).

So, I want to thank you for your past and future contributions and assure you that, with your help, Axcelis can reach its potential and return significant value to its shareholders, employees and our community.

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**Axcelis Technologies Board of Directors Unanimously Rejects Unsolicited Takeover
 Proposal by Japanese Company, Sumitomo Heavy Industries, and TPG**

**—Board Views Unsolicited Proposal by the Company’s Japanese Business Partner as Not
 in Best Interests of Axcelis and Its Shareholders—**

**— Board Confident In Company’s Long-Term Potential and Committed To Achieving
 Enhanced Value To Shareholders**

BEVERLY, Mass.—(Prime Newswire)—February 25, 2008 – Axcelis Technologies, Inc.(Nasdaq: ACLS) today announced that its Board of Directors has unanimously rejected an unsolicited proposal by a Japanese company, Sumitomo Heavy Industries, Ltd. (SHI) (TSE: 6302) and its private equity partner, TPG, to acquire all Axcelis common stock for \$5.20 per share as not in the best interests of Axcelis and its shareholders.

The Board, after thoroughly reviewing the proposal with its financial and legal advisors, concluded that the proposal substantially undervalues the Company and its prospects of reclaiming its market share and creating value for its shareholders. The Board’s priority is enabling Axcelis to realize its long term potential and, in turn, generate enhanced value for shareholders. The Board regularly evaluates all available strategic opportunities and will continue to do so. The Board is confident of Axcelis’ long term potential and the company’s ability to deliver attractive value to shareholders as it capitalizes on this potential.

Mary G. Puma, Chairman and Chief Executive Officer emphasized, “The Board and management of Axcelis are confident that Axcelis and its shareholders are well positioned to realize increasing benefits from the roll-out of Optima HD over the near term and other technological innovations over the long term. SHI’s opportunistic proposal fails to recognize this value despite SHI’s being well aware of the strength of Axcelis’ intellectual property, our strong product portfolio and high levels of customer satisfaction.”

Stephen R. Hardis, Lead Director of Axcelis’ Board of Directors, commented, “SHI and TPG appear to be timing their unsolicited proposal to reap all of the benefits of the investments Axcelis has made in developing new products over the past several years, leaving Axcelis shareholders with inadequate value in return for that investment. In addition, the proposal ignores the value SHI would obtain by acquiring full ownership of SEN, a Japanese joint venture Axcelis has with SHI.”

Goldman, Sachs & Co. is acting as financial advisor and Wachtell, Lipton, Rosen & Katz LLP and Edwards Angell Palmer & Dodge LLP are acting as legal advisors to Axcelis.

About Axcelis Technologies, Inc.

Axcelis Technologies, Inc., headquartered in Beverly, Massachusetts, provides innovative, high-productivity solutions for the semiconductor industry. Axcelis is dedicated to developing enabling process applications through the design, manufacture and complete life cycle support of ion implantation and cleaning systems. Axcelis also licenses its 50% owned joint venture, SEN Corporation, an SHI and Axcelis Company, to manufacture and sell certain implant products in Japan. The company’s Internet address is: www.axcelis.com.
