

AXCELIS TECHNOLOGIES INC

Form SC 13G

February 13, 2007

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

SCHEDULE 13G
Under the Securities Exchange Act of 1934
(Amendment No. _____)*

Axcelis Technologies, Inc.
(Name of Issuer)

Common
(Title of Class of Securities)

054540109
(CUSIP Number)

December 31, 2006
(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)
- Rule 13d-1(d)

*The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

CUSIP No. 054540109

1. Names of Reporting Persons.
I.R.S. Identification Nos. of above persons (entities only).

Donald Smith & Co., Inc.
13-2807845

2. Check the Appropriate Box if a Member of a Group (See Instructions)

- (a)
- (b) [X]

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3. SEC Use Only
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4. Citizenship or Place of Organization
A Delaware Corporation

| | | |
|---|-----------------------------|-------------------|
| Number of Shares Beneficially Owned by Each Reporting Person With | 5. Sole Voting Power | 7,839,800 shares |
| | 6. Shared Voting Power | 0 |
| | 7. Sole Dispositive Power | 10,120,900 shares |
| | 8. Shared Dispositive Power | 0 |

9. Aggregate Amount Beneficially Owned by Each Reporting Person
10,120,900 shares

10. Check if the Aggregate Amount in Row (9) Excludes Certain Shares (See Instructions)

11. Percent of Class Represented by Amount in Row (9) 9.99%

12. Type of Reporting Person (See Instructions) IA

Item 1.

(a) Name of Issuer: Axcelis Technologies, Inc.
(b) Address of Issuer's Principal Executive Offices
108 Cherry Hill Drive
Beverly, MA 01915

Item 2.

(a) Name of Person Filing: Donald Smith & Co., Inc.
(b) Address of Principal Business Office:
152 West 57th Street
New York, NY 10019
(c) Citizenship: A Delaware Corporation
(d) Title of Class of Securities: Common
(e) CUSIP Number: 054540109

Item 3. This statement is filed pursuant to Section 240.13d-1(b), and the person filing is an investment advisor registered in accordance with Section 240.13d-1(b) (1) (ii) (E);

Item 4. Ownership.

Provide the following information regarding the aggregate number and percentage of the class of securities of the issuer identified in Item 1.

(a) Amount beneficially owned: SEE ITEM 9 OF COVER PAGE
(b) Percent of class: SEE ITEM 11 OF COVER PAGE

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- (c) Number of shares as to which the person has:
- (i) SOLE POWER TO VOTE: SEE ITEM 5 OF COVER PAGE
- (ii) SHARED POWER TO VOTE: SEE ITEM 6 OF COVER PAGE
- (iii) SOLE POWER TO DISPOSE: SEE ITEM 7 OF COVER PAGE
- (iv) SHARED POWER TO DISPOSE: SEE ITEM 8 OF COVER PAGE

Item 5. Ownership of Five Percent or Less is NOT APPLICABLE

Item 6. Ownership of More than Five Percent on Behalf of Another Person:
All securities reported in this schedule are owned by advisory clients of Donald Smith & Co., Inc., no one of which, to the knowledge of Donald Smith & Co., Inc. owns more than 5% of the class.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company
NOT APPLICABLE

Item 8. Identification and Classification of Members of the Group
NOT APPLICABLE

Item 9. Notice of Dissolution of Group
NOT APPLICABLE

Item 10. Certification

(a)

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired and are held in the ordinary course of business and were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 12, 2007
Date

Donald G. Smith _____
Signature

President _____
Title