

[AXCELIS logo]

Axcelis Technologies, Inc.
\$125,000,000 Principal Amount of
4 1/4% Convertible Subordinated Notes Due January 15, 2007

6,250,000 Shares of Common Stock

We previously issued the notes in a private placement in January 2002. This prospectus supplement, together with the prospectus dated May 21, 2002, will be used by selling securityholders to resell their notes and the shares of our common stock issuable upon conversion of their notes.

A copy of the prospectus dated May 21, 2002 should be delivered to you together with this prospectus supplement. In deciding whether to invest, you should carefully review the information in the prospectus and this prospectus supplement.

Investing in the notes and shares of our common stock involves a high degree of risk. You should carefully read and consider the "Risk Factors" beginning on page 5 of the prospectus.

Neither the Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement is truthful or complete. Any representation to the contrary is a criminal offense.

The date of this prospectus supplement is June 12, 2002.

Axcelis Technologies, Inc. o 55 Cherry Hill Drive, Beverly,
Massachusetts 01915 o (978) 787-4000

SELLING SECURITYHOLDERS

The information in the following table supersedes in part the information in the table appearing under the heading "Selling Securityholders" in the prospectus:

Name (1) -----	Principal Amount of Notes Beneficially Owned That May be Sold -----	Percentage of Notes Outstanding -----	Number of Shares of Common Stock Issuable Upon Conversion That May be Sold (2) -----	Number of Shares of Common Stock Beneficially Owned After Offering(3) -----
Alexandra Global Investment Fund 1, LTD	\$4,000,000	3.2	200,000	0
Alpine Associates (4)	\$8,150,000	6.5	407,500	0
Alpine Partners, L.P. (5)	\$1,100,000	*	55,000	0
CALAMOS Market Neutral Fund - CALAMOS Investment Trust	\$5,200,000	4.2	260,000	0
Consulting Group Capital Markets Funds	\$ 300,000	*	15,000	0
RAM Trading Inc.	\$3,500,000	2.8	175,000	0

* Less than 1%.

- (1) Individuals and entities who receive shares of common stock covered by this prospectus from a selling securityholder as a gift or in connection with a pledge may sell up to 500 of those shares using this prospectus.
- (2) Assumes conversion of the full amount of the notes held by the selling securityholder at the initial rate of approximately 50 shares of common stock per \$1,000 in principal amount of the notes. The conversion rate and the number of shares of common stock issuable upon conversion of the notes may adjust under circumstances described under "Description of Notes - Conversion of Notes" in the prospectus. Accordingly, the number of shares of common stock issuable upon conversion of the notes may increase or decrease from time to time.
- (3) Includes shares of common stock issuable upon conversion of the notes beneficially owned by the selling securityholder. Assumes that the selling securityholder has sold all the shares of common stock shown as being issuable upon the assumed conversion of the notes listed next to its name and represents additional shares of common stock beneficially owned before the offering.
- (4) Represents an additional \$1,800,000 principal amount of the notes acquired after May 21, 2002.
- (5) Represents an additional \$200,000 principal amount of the notes acquired after May 21, 2002.