UNITED STATES
SECURITIES AND EXCHANGE COMMISSION

Washington, D.C. 20549

FORM 10-K/A

(Amendment No. 1)

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended December 31, 2023

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from to

Commission file number 000-30941

AXCELIS TECHNOLOGIES, INC.

(Exact name of registrant as specified in its charter)

Delaware	**34-1818596**
(State or other jurisdiction of incorporation or organization)	(IRS Employer Identification No.)

108 Cherry Hill Drive
Beverly, Massachusetts 01915
(Address of principal executive offices) (zip code)

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

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading symbol	Name of each exchange on which registered
Common Stock, $.001 par value	ACLS	Nasdaq Global Select Market

Securities registered pursuant to Section 12(g) of the Act:
None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by checkmark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T during the preceding 12 months (or for such shorter period that the registrant was required to submit such files). Yes ☒ No ☐

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

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

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

Indicate by check mark whether the registrant has filed a report on and attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public accounting firm that prepared or issued its audit report. ☒

If securities are registered pursuant to Section 12(b) of the Act, indicate by check mark whether the financial statements of the registrant included in the filing reflect the correction of an error to previously issued financial statements.

Indicate by check mark whether any of those error corrections are restatements that required a recovery analysis of incentive-based compensation received by any of the registrant's executive officers during the relevant recovery period pursuant to §240.10D-1(b).

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

Aggregate market value of the voting stock held by non-affiliates of the registrant as of June 30, 2023: $5,962,466,683

Number of shares outstanding of the registrant's Common Stock, $0.001 par value, as of February 20, 2024: 32,625,760

Documents incorporated by reference:

Portions of the definitive Proxy Statement for Axcelis Technologies, Inc.'s Annual Meeting of Stockholders to be held on May 9, 2024 are incorporated by reference into Part III of this Form 10-K.

EXPLANATORY NOTE

This Amendment No. 1 to our Annual Report on Form 10-K (the "Amendment") amends our previously filed Annual Report on Form 10-K for the fiscal year ended December 31, 2023, filed with the Securities and Exchange Commission on February 23, 2024 (the "Form 10-K"). This Amendment is being filed to correct a reference error in Item 8, and to correct erroneous date references in the opinions of our Independent Registered Public Accounting Firm (i) on Internal Control Over Financial Reporting appearing in Item 9A on page 34 of the Form 10-K and (ii) on the audit of our financial statements for the year ending December 31, 2023, appearing on pages 38 – 39 of the Form 10-K, following Item 16, in response to Item 8 disclosure requirements.

This Amendment includes new certifications by our Principal Executive Officer and Principal Financial Officer as exhibits 31.1, 31.2, 32.1 and 32.2, and a new consent by Ernst & Young LLP, Independent Registered Public Accounting Firm as Exhibit 23.1. Except as expressly set forth above, this Amendment does not, and does not purport to, amend, update or restate the information in any other item of the Form 10-K or reflect any events that have occurred after the filing of the Form 10-K. This Amendment consists solely of the cover page, this explanatory note, a replacement of Item 8 in the original Form 10-K, a replacement of Item 9A in the original Form 10-K, a replacement of Item 15 and related material in the original Form 10-K (in response to Item 8) and the signature page, the officer certifications, and the consent required to be filed as exhibits hereto.

Item 8. Financial Statements and Supplementary Data.

Response to this Item is submitted as a separate section of this report immediately following Item 16.

Item 9A. Controls and Procedures.

Evaluation of Disclosure Controls and Procedures.

Our management, with the participation of our principal executive officer and principal financial officer, has evaluated the effectiveness of our disclosure controls and procedures (as defined in Rule 13a-15(e) under the Securities Exchange Act of 1934, as amended (the "Exchange Act")) as of the end of the period covered by this Annual Report on Form 10-K (the "Evaluation Date"). Based on this evaluation, our principal executive officer and principal financial officer concluded that, as of the Evaluation Date, these disclosure controls and procedures are effective.

Internal Control over Financial Reporting

Management's Annual Report on Internal Control over Financial Reporting

Management is responsible for establishing and maintaining adequate internal control over financial reporting, as such term is defined in Rule 13a-15(f) under the Exchange Act. Because of its inherent limitations, internal control over financial reporting may not prevent or detect all misstatements. A control system, no matter how well designed and operated, can provide only reasonable assurance with respect to financial statement preparation and presentation. Projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Management assessed the effectiveness of our internal control over financial reporting as of December 31, 2023. In making this assessment, management used the criteria set forth in the Committee of Sponsoring Organizations of the Treadway Commission ("COSO") Internal Control—2013 Integrated Framework.

Based on this assessment, management has concluded that, as of December 31, 2023, our internal control over financial reporting is effective based on those criteria.

The independent registered public accounting firm of Ernst & Young LLP, as auditors of our consolidated financial statements, has issued an attestation report on its assessment of our internal control over financial reporting.

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Axcelis Technologies, Inc.

Opinion on Internal Control Over Financial Reporting

We have audited Axcelis Technologies, Inc.'s internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework) (the COSO criteria). In our opinion, Axcelis Technologies, Inc. (the Company) maintained, in all material respects, effective internal control over financial reporting as of December 31, 2023, based on the COSO criteria.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the 2023 consolidated financial statements of the Company and our report dated February 23, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting included in the accompanying Management's Annual Report on Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects.

Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control Over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Ernst & Young LLP

Boston, Massachusetts
February 23, 2024

Changes in Internal Control over Financial Reporting

There was no change in our internal control over financial reporting (as defined in Rule 13a-15(f) under the Exchange Act) identified in connection with the evaluation of our internal control that occurred during our fourth quarter that has materially affected, or is reasonably likely to materially affect, our internal control over financial reporting.

Item 15. Exhibits and Financial Statement Schedules.

(a) The following documents are filed as part of this Report:

1) Financial Statements:

2) Financial Statement Schedules:

Schedule II—Valuation and Qualifying Accounts for the years ended December 31, 2023, 2022 and 2021.

3) Exhibits

The exhibits filed as part of this Annual Report on Form 10-K are listed on the Exhibit Index immediately preceding the signature page, which Exhibit Index is incorporated herein by reference.

All other schedules for which provision is made in the applicable regulation of the Securities and Exchange Commission are not required under the related instructions or are inapplicable, and therefore have been omitted.

Report of Independent Registered Public Accounting Firm

To the Stockholders and the Board of Directors of Axcelis Technologies, Inc.

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Axcelis Technologies, Inc. (the Company) as of December 31, 2023 and 2022, the related consolidated statements of operations, comprehensive income, stockholders' equity and cash flows for each of the three years in the period ended December 31, 2023, and the related notes and financial statement schedule listed in the Index at Item 15(a) (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2023 and 2022, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2023, in conformity with U.S. generally accepted accounting principles.

We also have audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of December 31, 2023, based on criteria established in Internal Control—Integrated Framework issued by the Committee of Sponsoring Organizations of the Treadway Commission (2013 framework), and our report dated February 23, 2024 expressed an unqualified opinion thereon.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the financial statements that were communicated or required to be communicated to the audit committee and that: (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Systems Revenue recognition

Description of the Matter

As discussed in Note 2 and Note 3 to the consolidated financial statements, the Company generates revenue from the sale of ion implantation and other processing equipment used in the manufacture of semiconductor chips ("systems revenue"). The Company's revenue contracts for systems have multiple performance obligations, including the systems themselves and obligations that are not delivered simultaneously with the systems. Systems revenue accounted for $883.6 million of the Company's total revenue of $1.1 billion in 2023.

Auditing management's recognition of revenue was challenging because of the higher extent of audit effort and because the amounts are material to the consolidated financial statements and related disclosures. During our risk assessment process, we identified a higher inherent risk related to revenue primarily due to the size of the account, as well as the focus on revenue from readers of the financial statements.

How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design and tested the operating effectiveness of controls over the Company's systems revenue recognition process, including controls designed to mitigate the risk of override of controls. This included testing controls over management's review of manual journal entries and revenue related account reconciliations. To test systems revenue recognition, we reconciled revenue recognized to the Company's general ledger to test completeness and performed substantive test of details over significant transactions deemed to be key items and a representative sample of the remaining transactions. For example, we selected and read a sample of arrangements to evaluate the completeness of the promised products and services and the related revenue recognized. We also confirmed directly with certain of the Company's customers the terms of the selected system revenue arrangements.
	Estimate of Excess Inventory
Description of the Matter	The Company's inventories totaled $306.5 million, net, as of December 31, 2023. As described in Note 2 and Note 6 to the consolidated financial statements, the Company records a provision for estimated excess inventory. Management determines the provision using its assumptions of future materials usage, based on estimates of demand and market conditions. Auditing the Company's provision for excess inventory is complex due to the highly judgmental nature of the factors used to estimate demand and market conditions. Specifically, the Company's estimated materials usage may be significantly affected by management's assumptions of forecasted system sales and the size and utilization of the installed base of systems. Management's identification and measurement of these factors are forward looking and could be affected by future economic and market conditions that could have a significant effect on the excess inventory reserve.
How We Addressed the Matter in Our Audit	We obtained an understanding, evaluated the design, and tested the operating effectiveness of internal controls, including management review controls, over the Company's excess inventory reserve estimation process. This included management's assessment of the assumptions and data underlying the excess inventory provision. For example, we tested controls over management's review of its systems sales forecasts, as well as management's review of the assumptions relating to the market size and utilization of installed systems. We also tested management's controls over the completeness and accuracy of the data used in the estimation model. Our substantive audit procedures included, among others, evaluating the significant assumptions stated above and testing the accuracy and completeness of the underlying data used by management to compute the value of excess inventory. For example, we compared the quantities of on-hand inventories to historical and forecasted materials usage and evaluated adjustments to forecasts for specific product considerations, such as technological changes or alternative uses. We also assessed the historical accuracy of management's estimates and performed sensitivity analyses over the significant assumptions to evaluate the changes in the excess inventory estimates that would result from changes in the underlying assumptions.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 1999.

Boston, Massachusetts
February 23, 2024

Axcelis Technologies, Inc.
Consolidated Statements of Operations
(In thousands, except per share amounts)

	Twelve months ended December 31, 2023	2022	2021
Revenue:			
Product	$ 1,095,650	$ 890,582	$ 634,445
Services	34,954	29,416	27,983
Total revenue	1,130,604	919,998	662,428
Cost of revenue:			
Product	608,112	492,104	349,558
Services	31,191	26,104	26,425
Total cost of revenue	639,303	518,208	375,983
Gross profit	491,301	401,790	286,445
Operating expenses:			
Research and development	96,907	78,356	65,431
Sales and marketing	62,805	53,599	47,548
General and administrative	65,794	57,474	46,141
Total operating expenses	225,506	189,429	159,120
Income from operations	265,795	212,361	127,325
Other income (expense):			
Interest income	18,199	4,551	209
Interest expense	(5,347)	(5,576)	(4,835)
Other, net	(48)	(6,451)	(2,271)
Total other income (expense)	12,804	(7,476)	(6,897)
Income before income taxes	278,599	204,885	120,428
Income tax provision	32,336	21,806	21,778
Net income	$ 246,263	$ 183,079	$ 98,650
Net income per share:			
Basic	$ 7.52	$ 5.54	$ 2.94
Diluted	$ 7.43	$ 5.46	$ 2.88
Shares used in computing net income per share:			
Basic weighted average shares of common stock	32,758	33,043	33,555
Diluted weighted average shares of common stock	33,165	33,542	34,268

See accompanying Notes to these Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Statements of Comprehensive Income
(In thousands)

	Twelve months ended December 31,		
	2023	**2022**	**2021**
Net income	$ 246,263	$ 183,079	$ 98,650
Other comprehensive income (loss):			
Foreign currency translation adjustments	38	(4,058)	(1,881)
Amortization of actuarial net gain and other adjustments from pension plan, net of tax	84	325	211
Total other comprehensive income (loss)	122	(3,733)	(1,670)
Comprehensive income	$ 246,385	$ 179,346	$ 96,980

See accompanying Notes to these Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Balance Sheets
(In thousands, except per share amounts)

	December 31, 2023	December 31, 2022
ASSETS		
Current assets:		
Cash and cash equivalents	$ 167,297	$ 185,595
Short-term investments	338,851	246,571
Accounts receivable, net	217,964	169,773
Inventories, net	306,482	242,406
Prepaid expenses and other current assets	49,397	33,300
Total current assets	1,079,991	877,645
Property, plant and equipment, net	53,971	39,664
Operating lease assets	30,716	12,146
Finance lease assets, net	16,632	17,942
Long-term restricted cash	6,654	752
Deferred income taxes	53,428	31,701
Other assets	40,575	33,791
Total assets	$ 1,281,967	$ 1,013,641
LIABILITIES AND STOCKHOLDERS’ EQUITY		
Current liabilities:		
Accounts payable	$ 54,400	$ 62,346
Accrued compensation	31,445	35,540
Warranty	14,098	8,299
Income taxes	6,164	4,304
Deferred revenue	164,677	123,471
Current portion of finance lease obligation	1,511	1,229
Other current liabilities	12,834	12,943
Total current liabilities	285,129	248,132
Long-term finance lease obligation	43,674	45,185
Long-term deferred revenue	46,208	31,306
Other long-term liabilities	42,074	21,762
Total liabilities	417,085	346,385
Commitments and contingencies (Note 16)		
Stockholders’ equity:		
Common stock, $0.001 par value, 75,000 shares authorized; 32,685 shares issued and outstanding at December 31, 2023; 32,775 shares issued and outstanding at December 31, 2022	33	33
Additional paid-in capital	547,189	550,299
Retained earnings	319,506	118,892
Accumulated other comprehensive loss	(1,846)	(1,968)
Total stockholders’ equity	864,882	667,256
Total liabilities and stockholders’ equity	$ 1,281,967	$ 1,013,641

See accompanying Notes to these Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Statements of Stockholders' Equity
(In thousands)

	Common Stock		Additional Paid-in Capital	Accumulated Deficit / Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Stockholders' Equity
	Shares	Amount				
Balance at December 31, 2020	33,633	$ 34	$ 570,102	$ (91,969)	$ 3,435	$ 481,602
Net income	—	—	—	98,650	—	98,650
Foreign currency translation adjustments	—	—	—	—	(1,881)	(1,881)
Change in pension obligation, net of tax	—	—	—	—	211	211
Exercise of stock options	396	—	3,687	—	—	3,687
Issuance of stock under Employee Stock Purchase Plan	26	—	1,179	—	—	1,179
Issuance of restricted common shares	326	—	(6,564)	—	—	(6,564)
Stock-based compensation expense	—	—	12,067	—	—	12,067
Repurchase of common stock	(1,141)	(1)	(20,588)	(29,403)	—	(49,992)
Balance at December 31, 2021	33,240	33	559,883	(22,722)	1,765	538,959
Net income	—	—	—	183,079	—	183,079
Foreign currency translation adjustments	—	—	—	—	(4,058)	(4,058)
Change in pension obligation, net of tax	—	—	—	—	325	325
Exercise of stock options	103	—	1,247	—	—	1,247
Issuance of stock under Employee Stock Purchase Plan	29	—	1,662	—	—	1,662
Issuance of restricted common shares	291	—	(9,907)	—	—	(9,907)
Stock-based compensation expense	—	—	13,444	—	—	13,444
Repurchase of common stock	(888)	—	(16,030)	(41,465)	—	(57,495)
Balance at December 31, 2022	32,775	33	550,299	118,892	(1,968)	667,256
Net income	—	—	—	246,263	—	246,263
Foreign currency translation adjustments	—	—	—	—	38	38
Change in pension obligation, net of tax	—	—	—	—	84	84
Exercise of stock options	3	—	25	—	—	25
Issuance of stock under Employee Stock Purchase Plan	16	—	2,057	—	—	2,057
Issuance of restricted common shares	271	—	(16,611)	—	—	(16,611)
Stock-based compensation expense	—	—	18,269	—	—	18,269
Repurchase of common stock	(380)	—	(6,850)	(45,649)	—	(52,499)
Balance at December 31, 2023	32,685	$ 33	$ 547,189	$ 319,506	$ (1,846)	$ 864,882

See accompanying Notes to these Consolidated Financial Statements

Axcelis Technologies, Inc.
Consolidated Statements of Cash Flows
(In thousands)

	Twelve months ended December 31,		
	2023	2022	2021
Cash flows from operating activities			
Net income	$ 246,263	$ 183,079	$ 98,650
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	13,069	11,607	10,818
Deferred income taxes	(20,018)	8,536	20,257
Stock-based compensation expense	18,269	13,444	12,067
Provision for doubtful accounts	1,129	—	—
Provision for excess and obsolete inventory	5,211	4,565	3,755
Accretion of discounts and premiums on marketable securities	(12,077)	—	—
Currency loss on foreign denominated transactions	2,252	5,986	—
Changes in operating assets and liabilities:			
Accounts receivable	(50,755)	(67,270)	(18,146)
Inventories	(69,957)	(58,433)	(39,023)
Prepaid expenses and other current assets	(16,046)	(6,533)	(3,955)
Accounts payable and other current liabilities	(8,103)	31,392	22,046
Deferred revenue	56,183	86,366	45,385
Income taxes	3,786	3,493	253
Other assets and liabilities	(12,337)	(625)	(1,917)
Net cash provided by operating activities	156,869	215,607	150,190
Cash flows from investing activities			
Expenditures for property, plant and equipment and capitalized software	(20,656)	(10,683)	(8,718)
Purchase of short-term investments	(388,809)	(246,571)	—
Maturities of short-term investments	308,607	—	—
Net cash used in investing activities	(100,858)	(257,254)	(8,718)
Cash flows from financing activities			
Net settlement on restricted stock grants	(16,611)	(9,907)	(6,564)
Repurchase of common stock	(52,499)	(57,495)	(49,992)
Proceeds from Employee Stock Purchase Plan purchases	2,057	1,662	1,179
Principal payments on finance lease obligation	(1,240)	(987)	(763)
Proceeds from exercise of stock options	25	1,247	3,687
Net cash used in financing activities	(68,268)	(65,480)	(52,453)
Effect of exchange rate changes on cash and cash equivalents	(139)	(2,206)	2,429
Net (decrease) increase in cash, cash equivalents and restricted cash	(12,396)	(109,333)	91,448
Cash, cash equivalents and restricted cash at beginning of period	186,347	295,680	204,232
Cash, cash equivalents and restricted cash at end of period	$ 173,951	$ 186,347	$ 295,680
Supplemental disclosure of cash flow information			
Cash paid for:			
Income taxes	$ 54,217	$ 10,763	$ 1,500
Interest	$ 4,874	$ 4,992	$ 5,086

See accompanying Notes to these Consolidated Financial Statements

Note 1. Nature of Business

Axcelis Technologies, Inc. (“Axcelis” or the “Company”) was incorporated in Delaware in 1995, and is a worldwide producer of ion implantation and other processing equipment used in the fabrication of semiconductor chips in the United States, Europe and Asia. In addition to equipment, we provide extensive aftermarket lifecycle products and services, including spare parts, equipment upgrades, maintenance services and customer training.

Note 2. Summary of Significant Accounting Policies

The accompanying consolidated financial statements reflect the application of certain significant accounting policies as described in this note and elsewhere in the footnotes.

(a) Basis of Presentation

The accompanying consolidated financial statements include the consolidated accounts of the Company and its wholly-owned, controlled subsidiaries. All intercompany balances and transactions have been eliminated in consolidation.

Events occurring subsequent to December 31, 2023 have been evaluated for potential recognition or disclosure in the consolidated financial statements.

(b) Use of Estimates

The preparation of these consolidated financial statements in conformity with accounting principles generally accepted in the United States of America requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and the disclosure of contingent assets and liabilities at the dates of the financial statements and the reported amounts of revenue and expenses during the reporting periods. On an ongoing basis, we evaluate our estimates and judgments, including those related to revenue recognition, the realizable value of accounts receivable and inventories, warranty reserves, valuing stock-based compensation instruments and reserves relating to tax assets and liabilities. Actual amounts could differ from these estimates. Changes in estimates are recorded in the period in which they become known.

(c) Foreign Currency

The functional currency for substantially all operations outside the United States is the local currency. Financial statements for these operations are translated into United States dollars at year-end rates as to assets and liabilities and average exchange rates during the year as to revenue and expenses. The resulting translation adjustments are recorded in stockholders’ equity as an element of accumulated other comprehensive income (loss). Foreign currency transaction gains and losses are included in other income (expense) in the Consolidated Statements of Operations.

For the years ended December 31, 2023, 2022, and 2021, we had foreign exchange losses of $0.5 million, $6.6 million, and $2.5 million, respectively.

(d) Cash, Cash Equivalents and Short-term Investments

Cash and cash equivalents consist of cash on hand and highly liquid investments with original maturities of ninety days or less. Cash equivalents consist primarily of money market funds, U.S. Government and Agency Securities and deposit accounts. Cash equivalents are carried on the balance sheet at fair market value. Short-term investments are highly liquid investments with original maturities of greater than 90 days but less than one year from date of purchase and are carried on the balance sheet at amortized cost. Our short-term investments consist primarily of U.S. Government and Agency securities and are classified as held-to-maturity based on our positive intent and ability to hold the securities to maturity. Income related to these securities is recorded in interest income in the Consolidated Statements of Operations.

(e) Inventories

Inventories are carried at the lower of cost or net realizable value, determined using the first-in, first-out ("FIFO") method. We periodically review our inventories and make provisions as necessary for estimated obsolescence or damaged goods to ensure values approximate lower of cost or net realizable value. The amount of such markdowns is equal to the difference between cost of inventory and the estimated market value based upon assumptions about future demands, selling prices, and market conditions.

We record a provision for estimated excess inventory. The provision is determined using management's assumptions of materials usage, based on estimates of demand, market conditions, and the size and utilization of our installed base. If actual market conditions become less favorable than those projected by management, additional inventory write-downs may be required.

(f) Property, Plant and Equipment and Leased Assets

Property, plant and equipment are stated at cost, less accumulated depreciation and amortization.

On January 30, 2015, we sold our corporate headquarters facility. As part of this sale, we also entered into a 22-year lease agreement. We accounted for the sale leaseback transaction as a financing arrangement for financial reporting purposes. We retained the historical costs of the property and the related accumulated depreciation on our financial books within property, plant and equipment and will continue to depreciate the property for financial reporting purposes over the lesser of its remaining useful life or its initial lease term of 22 years.

Depreciation and amortization are recorded using the straight-line method over the estimated useful lives of the related assets as follows:

Asset Classification	Estimated Useful Life
Land, buildings and equipment (under lease)	Lesser of the lease term or estimated useful life of the asset
Machinery and equipment	3 to 10 years

Repairs and maintenance costs are expensed as incurred. Expenditures greater than $2.5 thousand for renewals and betterments are capitalized and depreciated over their useful lives.

(g) Impairment of Long-Lived Assets

We record impairment losses on long-lived assets when events and circumstances indicate that these assets might not be recoverable. Recoverability is assessed by a comparison of the assets' carrying amount to their expected future undiscounted net cash flows. If such assets are considered to be impaired, the impairment is measured based on the amount by which the carrying value exceeds its fair value.

We did not have any indicators of impairment during the period ending December 31, 2023. We did not record an impairment charge in the years ended December 31, 2023, 2022, or 2021.

Actual performance could be materially different from our current forecasts, which could impact estimates of undiscounted cash flows and may result in the impairment of the carrying amount of the long-lived assets in the future. This could be caused by strategic decisions made in response to economic and competitive conditions, the impact of the economic environment on our customer base, or a material adverse change in our relationships with significant customers.

(h) Concentration of Risk and Off-Balance Sheet Risk

Financial instruments that potentially subject us to concentrations of credit risk are principally cash equivalents, short-term investments and accounts receivable. Our cash equivalents and short-term investments are principally maintained in investment grade money-market funds, U.S. Government and Agency Securities and deposit accounts.

We have no significant off-balance-sheet risk such as currency exchange contracts, option contracts or other hedging arrangements.

Our exposure to market risk for changes in interest rates relates primarily to cash equivalents and short-term investments. The primary objective of our investment activities is to preserve principal without significantly increasing risk. This is accomplished by investing in marketable investment grade securities. We do not use derivative financial instruments to manage our investment portfolio and do not expect operating results or cash flows to be affected to any significant degree by any change in market interest rates.

We perform ongoing credit evaluations of our customers' financial condition and generally require no collateral to secure accounts receivable. For selected overseas sales, we require customers to obtain letters of credit before product is shipped. We maintain an allowance for doubtful accounts based on our assessment of the collectability of accounts receivable. We review the allowance for doubtful accounts quarterly. We do not have any off-balance sheet credit exposure related to our customers.

Our customers consist of semiconductor chip manufacturers located throughout the world and net sales to our ten largest customers accounted for 51.7%, 59.4% and 69.5% of revenue in 2023, 2022 and 2021, respectively.

For the year ended December 31, 2023, we had no customers representing 10% or greater of total revenue. For the year ended December 31, 2022, we had two customers representing 13.1% and 11.5% of total revenue, respectively. For the year ended December 31, 2021, we had two customers representing 17.8% and 15.4% of total revenue, respectively.

As of December 31, 2023, we had one customer account for 12.2% of consolidated accounts receivable. As of December 31, 2022, we had two customers account for 19.4% and 11.5% of consolidated accounts receivable, respectively.

Some of the components and sub-assemblies included in our products are obtained either from a sole source or a limited group of suppliers. Disruption to our supply source, resulting either from economic conditions or other factors, could affect our ability to deliver products to our customers.

(i) Revenue Recognition

We recognize revenue in accordance with Accounting Standards Codification ("ASC") Topic 606, *Revenue from Contracts with Customers* or ("ASC 606"). Under ASC 606, revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration we expect to receive in exchange for those goods or services. We measure revenue based on the consideration specified in the customer arrangement, and revenue is recognized when the performance obligations in the customer arrangement are satisfied. A performance obligation is a promise in a contract to transfer a distinct product or service to the customer. The transaction price of a contract is allocated to each distinct performance obligation based upon the relative standalone selling price for each performance obligation and recognized as revenue when, or as, the customer receives the benefit of the performance obligation. To account for and measure revenue, we apply the following five steps:

1) Identify the contract with the customer

A contract with a customer exists when (i) we enter into an enforceable contract with a customer that defines each party's rights regarding the goods or services to be transferred and identifies the related payment terms, (ii) the contract has commercial substance, and (iii) we determine that collection of substantially all consideration for goods and services that are transferred is probable based on the customer's intent and ability to pay the promised consideration.

2) Identify the performance obligations in the contract

Performance obligations promised in a contract are identified based on the goods and services that will be transferred to the customer that are both capable of being distinct, whereby the customer can benefit from the good or service either on its own or together with other available resources, and are distinct in the context of the contract, whereby the transfer of the good or service is separately identifiable from other promises in the contract. To the extent a contract includes multiple promised goods and services, we must apply judgment to determine whether promised goods and services are capable of being distinct and distinct in the context of the contract. If these criteria are not met, the promised goods and services are accounted for as a combined performance obligation.

Systems sales consist of multiple performance obligations, including the system itself and obligations that are not delivered simultaneously with the system. These undelivered obligations might include a combination of installation services, extended warranty and support and spare parts, all of which are generally covered by a single sales price.

The Aftermarket business includes both products and services type arrangements. Performance obligations in these contracts consist of used tools, spare parts, equipment upgrades, maintenance services and customer training.

Customers who purchase new systems are provided an assurance-type warranty for one year after acceptance of the tool. For aftermarket transactions, we provide customers an assurance-type warranty for 90 days. Customers can choose to purchase extended warranty terms with enhanced support similar to a service-type warranty ranging from one to three years. In accordance with ASC 606, assurance-type warranties are not considered a performance obligation, whereas service-type warranties are.

3) Determine the transaction price

The transaction price is determined based on the consideration to which we will be entitled in exchange for transferring goods and services to the customer. To the extent the transaction price includes variable consideration, we estimate the amount of variable consideration that should be included in the transaction price utilizing either the expected value method or the most likely amount method depending on the nature of the variable consideration. Variable consideration is included in the transaction price if, in our judgment, it is probable that a significant future reversal of cumulative revenue under the contract will not occur. Any estimates, including the effect of the constraint on variable consideration, are evaluated at each reporting period for any changes. In applying this guidance, Companies must also consider whether any significant financing components exist.

The transaction price for all transactions is based on the price reflected in the individual customer's purchase order. Variable consideration has not been identified as a significant component of the transaction price for any of our transactions.

For those transactions where all performance obligations will be satisfied within one year or less, we apply the practical expedient outlined in ASC 606-10-32-18. This practical expedient allows us not to adjust promised consideration for the effects of a significant financing component if we expect at contract inception that the period between when we transfer the promised good or service to a customer and when the customer pays for that good or service will be one year or less. For those transactions that are expected to be completed after one year, we have assessed that there are no significant financing components because any difference between the promised consideration and the cash selling price of the good or service is for reasons other than the provision of financing.

4) Allocate the transaction price to performance obligations in the contract

If the contract contains a single performance obligation, the entire transaction price is allocated to the single performance obligation. Contracts that contain multiple performance obligations require an allocation of the transaction price to each performance obligation on a relative standalone selling price basis unless the transaction price is variable and meets the criteria to be allocated entirely to a performance obligation or to a distinct service that forms part of a single performance obligation.

Where required, we determine standalone selling price ("SSP") for each obligation based on consideration of both market and Company specific factors, including the selling price and profit margin for similar products, the cost to produce, and the anticipated margin.

For those contracts that contain multiple performance obligations (primarily systems sales, as well as some aftermarket contracts requiring both time and material inputs), we must determine the SSP. We use a cost plus margin approach in determining the SSP for any materials related performance obligations (such as upgrades, spare parts, systems). To determine the SSP for labor related performance obligations (such as the labor component of installation), we use directly observable inputs based on the standalone sale prices for these services.

5) Recognize revenue when or as we have satisfied a performance obligation

We satisfy performance obligations either over time or at a point in time. Revenue is recognized over time if either 1) the customer simultaneously receives and consumes the benefits provided by the entity's performance, 2) the entity's performance creates or enhances an asset that the customer controls as the asset is created or enhanced, or 3) the entity's performance does not create an asset with an alternative use to the entity and the entity has an enforceable right to payment for performance completed to date. If the entity does not satisfy a performance obligation over time, the related performance obligation is satisfied at a point in time by transferring the control of a promised good or service to a customer. Examples of control are using the asset to produce goods or services, enhance the value of other assets or settle liabilities, and holding or selling the asset. For over time recognition, ASC 606 requires us to select a single revenue recognition method for the performance obligation that faithfully depicts our performance in transferring control of the goods and services. The guidance allows entities to choose between two methods to measure progress toward complete satisfaction of a performance obligation:

Output methods - recognize revenue on the basis of direct measurements of the value to the customer of the goods or services transferred to date relative to the remaining goods or services promised under the contract (e.g., surveys of performance completed to date, appraisals of results achieved, milestones reached, time elapsed, and units produced or units delivered); and

Input methods - recognize revenue on the basis of the entity's efforts or inputs to the satisfaction of a performance obligation (e.g., resources consumed, labor hours expended, costs incurred, or time elapsed) relative to the total expected inputs to the satisfaction of that performance obligation.

We have the right to consideration from a customer in an amount that corresponds directly with the value to the customer of the entity's performance completed to date (i.e., certain aftermarket contracts), as such we have elected a practical expedient to recognize revenue in the amount to which the entity has a right to invoice for such services.

Product related revenues (whether for systems or aftermarket business) are recognized at a point in time, when they are shipped or delivered, depending on shipping terms.

For installation services, revenue is recognized at a point in time, once the installation of the tool is complete. The nature of the installation services is such that the customer does not simultaneously receive and consume the benefits provided by the entity's performance, nor does performance of installation services create or enhance an asset that the customer controls. Installation services do not create an asset with an alternative use to the entity, and the entity does not have an enforceable right to payment for performance completed to date.

Contract liabilities are reflected as deferred revenue on the consolidated balance sheet. Contract liabilities relate to payments invoiced or received in advance of completion of performance obligations under a contract. Contract liabilities are recognized as revenue upon the fulfillment of performance obligations.

Service-type warranties for any product are recognized over time, as these represent a stand ready obligation to service the product during the warranty period. Progress in the satisfaction of these performance obligations is measured using an input method of time elapsed.

Maintenance and service contracts are recognized over time. Progress in the satisfaction of these performance obligations is measured using an input method of either time elapsed in the case of fixed period contracts, or labor hours expended, in the case of project-based contracts.

(j) Recognizing Assets related to Recoverable Customer Contract Costs

We recognize an asset related to incremental costs incurred by us to obtain a contract with a customer if we expect to recover those costs. We will recognize an asset from costs incurred to fulfill a contract only if such costs relate directly to a contract with an entity that we can specifically identify, the costs incurred will generate or enhance resources that will be used in satisfying performance obligations in the future, and the costs are expected to be recovered. Any assets recognized related to costs to obtain or fulfill a contract are amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the asset relates.

In substantially all of our business transactions, we incur incremental costs to obtain contracts with customers, in the form of sales commissions. We maintain a commission program which awards our employees for System sales, aftermarket activity and other individual goals. Under ASC 606, an asset is amortized on a systematic basis that is consistent with the transfer to the customer of the goods or services to which the asset relates. However, ASC 606 provides a practical expedient to allow for the recognition of commission expense when incurred if the amortization period of the asset that the entity otherwise would have recognized is one year or less. Based on the nature of our commission agreements, all commissions are expensed as incurred based upon the expectation that the amortization period would be one year or less.

(k) Shipping and Handling Costs

Shipping and handling costs are included in cost of revenue.

(l) Stock-Based Compensation

We generally recognize compensation expense for all stock-based payments to employees and directors, including grants of stock options and restricted stock units, based on the grant-date fair value of those stock-based payments. For stock option awards, we use the Black-Scholes option pricing model, adjusted for expected forfeitures. Other valuation models may be utilized in the limited circumstances where awards with market-based vesting considerations, such as the price of our common stock, or performance-based awards, are granted. Stock-based compensation expense is recognized ratably over the requisite service period. For each stock option or restricted stock unit grant with vesting based on a combination of time, market or performance conditions, where vesting will occur if either condition is met, the related compensation costs are recognized over the shorter of the explicit service period or the derived service period.

See Note 13 for additional information relating to stock-based compensation.

(m) Income Taxes

We record income taxes using the asset and liability method. Deferred income tax assets and liabilities are recognized for the future tax consequences attributable to differences between the financial statement carrying amounts of existing assets and liabilities and their respective income tax basis, and operating loss and tax credit carryforwards.

Our consolidated financial statements contain certain deferred tax assets which have arisen primarily as a result of operating losses, as well as other temporary differences between financial and tax basis accounting. We establish a valuation allowance if the likelihood of realization of the deferred tax assets is reduced based on an evaluation of objective verifiable evidence. Significant management judgment is required in determining our provision for income taxes, our deferred tax assets and liabilities and any valuation allowance recorded against those net deferred tax assets. We evaluate the weight of all available evidence to determine whether it is more likely than not that some portion or all of the net deferred income tax assets will not be realized.

Income taxes include the largest amount of tax benefit for an uncertain tax position that is more likely than not to be sustained upon audit based on the technical merits of the tax position. Settlements with tax authorities, the expiration of statutes of limitations for particular tax positions, or obtaining new information on particular tax positions may cause a change to the effective tax rate. We recognize accrued interest related to unrecognized tax benefits as interest expense and penalties within operating expense in the consolidated statements of operations.

See Note 18 for additional information relating to income taxes.

(n) Computation of Net Income per Share

Basic earnings per share is computed by dividing income available to common stockholders (the numerator) by the weighted-average number of common shares outstanding (the denominator) for the period. The computation of diluted earnings per share is similar to basic earnings per share, except that the denominator is increased to include the number of additional common shares that would have been outstanding if the potentially dilutive common shares had been issued, calculated using the treasury stock method.

The components of net income per share are as follows:

	Year ended December 31,		
	2023	2022	2021
	(in thousands, except per share data)		
Net income available to common stockholders	$ 246,263	$ 183,079	$ 98,650
Weighted average shares of common stock outstanding used in computing basic income per share	32,758	33,043	33,555
Incremental options and RSUs	407	499	713
Weighted average shares of common stock used in computing diluted net income per share	33,165	33,542	34,268
Net income per share			
Basic	$ 7.52	$ 5.54	$ 2.94
Diluted	$ 7.43	$ 5.46	$ 2.88

Diluted weighted average common shares outstanding does not include restricted stock units outstanding to purchase 6,025, 4,929 and 2,554 common equivalent shares for the periods ended December 31, 2023, 2022 and 2021, respectively, as their effect would have been anti-dilutive.

(o) Accumulated Other Comprehensive Loss

The following table presents the changes in accumulated other comprehensive loss, net of tax, by component, for the year ended December 31, 2023:

	Foreign currency	Defined benefit pension plan	Total
		(in thousands)	
Balance at December 31, 2022	$ (1,994)	$ 26	$ (1,968)
Other comprehensive income and pension reclassification	38	84	122
Balance at December 31, 2023	$ (1,956)	$ 110	$ (1,846)

(p) Recent Accounting Guidance

In November 2023 the Financial Accounting Standards Board (“FASB”) issued Accounting Standards Update 2023-07, *Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures* ("ASU 2023-07"). ASU 2023-07 is intended to enhance disclosures for significant segment expenses for all public entities required to report segment information in accordance with ASC Topic 280, *Segment Reporting* ("ASC 280"). ASC 280 requires a public entity to report for each reportable segment a measure of segment profit or loss that its chief operating decision maker (“CODM”) uses to assess segment performance and to make decisions about resource allocations. ASU 2023-07 is intended to improve financial reporting by requiring disclosure of incremental segment information on an annual and interim basis for all public entities to enable investors to develop more useful financial analyses. ASU 2023-07 is effective for fiscal years beginning after December 15, 2023, and interim periods within fiscal years beginning after December 15, 2024. Early adoption is permitted. A public entity should apply ASU 2023-07 retrospectively to all prior periods presented in the consolidated financial statements. The Company is currently evaluating the impact of *ASU 2023-07* on its future consolidated financial statements and related disclosures.

In December 2023 the FASB issued Accounting Standards Update 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax Disclosures* ("ASU 2023-09"). ASU 2023-09 is intended to enhance the transparency and decision usefulness of income tax disclosures. ASU 2023-09 addresses investor requests for enhanced income tax information primarily through changes to the rate reconciliation and income taxes paid information. Early adoption is permitted. A public entity should apply ASU 2023-09 prospectively to all annual periods beginning after December 15, 2024. The Company is currently evaluating the impact of ASU 2023-09 on its future consolidated financial statements and related disclosures.

Note 3. Revenue

We design, manufacture and service ion implantation and other processing equipment used in the fabrication of semiconductor chips and sell our products to leading semiconductor chip manufacturers worldwide. We offer a complete line of high energy, high current and medium current implanters for all application requirements. In addition, we provide extensive aftermarket lifecycle products and services, including used tools, spare parts, equipment upgrades, maintenance service and customer training. Our revenue recognition policies are set forth in Section (i) of Note 2, Summary of Significant Accounting Policies.

(a) Alternative Operational Revenue Categories used by Management

To reflect the organization of our business operations, management reviews revenue in two categories: revenue from sales of new systems and revenue arising from the sale of used systems, parts and labor to customers who own systems, which we refer to as “CS&I” or “aftermarket.”

Below are the revenues by categories used by management for the periods covered in this report:

	Year ended December 31,		
	2023	2022	2021
	(in thousands)		
Systems	$ 883,604	$ 692,061	$ 454,598
Aftermarket	247,000	227,937	207,830
Total Revenue	$ 1,130,604	$ 919,998	$ 662,428

(b) Economic Factors Affecting our Revenue: Geographic Breakdown of Revenue

Global economic conditions have a direct impact on our revenue. We are substantially dependent on sales of our products and services to customers outside of the United States. Adverse economic conditions, political instability, potential adverse tax consequences, regulatory changes and volatility in exchange rates pose a risk that our clients may reduce, postpone or cancel spending for our products and services, which would impact our revenue.

Revenue by geographic markets is determined based upon the location to which our products are shipped and where our services are performed. Revenue in our principal geographic markets is as follows:

	Year ended December 31,		
	2023	2022	2021
	(in thousands)		
North America	$ 174,810	$ 143,701	$ 48,715
Asia Pacific	811,308	673,752	516,105
Europe	144,486	102,545	97,608
Total Revenue	$ 1,130,604	$ 919,998	$ 662,428

(c) Recognition of Deferred Revenue from Contract Liabilities

Contract liabilities are as follows:

	Year ended December 31, 2023	2022	2021
	(in thousands)		
Balance, beginning of the period	$ 154,777	$ 68,436	$ 23,058
Deferral of revenue	185,688	146,674	66,349
Recognition of deferred revenue	(129,580)	(60,333)	(20,971)
Balance, end of the period	$ 210,885	$ 154,777	$ 68,436

Contract liabilities are reflected as deferred revenue on the consolidated balance sheet. Contract liabilities relate to payments received or amounts invoiced in advance of completion of performance obligations under a contract. Contract liabilities are recognized as revenue upon the fulfillment of performance obligations.

As of December 31, 2023, we had deferred revenue of $210.9 million. This represents the portion of the transaction price for contracts with customers allocated to the performance obligations that remain unsatisfied or partially unsatisfied. Short-term deferred revenue of $164.7 million as of December 31, 2023 represents performance obligations that are expected to be satisfied within the next 12 months. This amount relates primarily to prepayments made prior to system delivery as well as to installation and non-standard warranty performance obligations for system sales. Long-term deferred revenue of $46.2 million as of December 31, 2023 relates to prepayments made prior to system delivery as well as to extended warranty performance obligations that we expect to be completed in excess of the next 12 months but within the next 24 months.

The majority of our system transactions have payment terms that are 90% due upon shipment of the tool and 10% due upon installation. Aftermarket transaction payment terms are such that payment is due either within 30 or 60 days of service provided or delivery of parts.

Note 4. Cash, cash equivalents and restricted cash

	December 31, 2023	December 31, 2022
	(in thousands)	
Cash and cash equivalents	$ 167,297	$ 185,595
Long-term restricted cash	6,654	752
Total cash, cash equivalents and restricted cash	$ 173,951	$ 186,347

As of December 31, 2023, we had $6.7 million in restricted cash which relates to a $5.9 million cash collateral relating to our lease for our headquarters in Beverly, Massachusetts, a $0.7 million letter of credit relating to workers' compensation insurance and a $0.1 million deposit relating to customs activity.

Note 5. Accounts Receivable and Allowance for Credit Losses

All trade receivables are reported on the Consolidated Balance Sheets at their amortized cost adjusted for any write-offs and net of allowances for credit losses.

Axcelis maintains an allowance for credit losses, which represents an estimate of expected losses over the remaining contractual life of its receivables considering current market conditions and estimates for supportable forecasts when appropriate. The estimate is a result of the Company's ongoing assessments and evaluations of collectability, historical loss experience, and future expectations in estimating credit losses in its receivable portfolio. Axcelis uses historical loss experience rates and applies them to a related aging analysis while also considering customer and/or economic risk where appropriate. Determination of the proper amount of allowances requires management to exercise judgment about the timing, frequency and severity of credit losses that could materially affect the provision for credit losses and, as a result, net earnings.

The allowance takes into consideration numerous quantitative and qualitative factors that include receivable type, historical loss experience, delinquency trends, collection experience, current economic conditions, estimates for supportable forecasts, when appropriate, and credit risk characteristics.

Axcelis evaluates the credit risk of the customer when extending credit based on a combination of various financial and qualitative factors that may affect its customers' ability to pay. These factors may include the customer's financial condition, past payment experience, and credit ratings from credit bureaus, as well as the value of the underlying collateral.

Management performs detailed reviews of its receivables on a quarterly basis to assess the adequacy of the allowances and to determine if any impairment has occurred. Amounts determined to be uncollectable are charged directly against the allowance, while amounts recovered on previously written-off accounts increase the allowance. Changes to the allowance for credit losses are maintained through adjustments to the provision for credit losses, which are charged to current period earnings.

The following table shows changes of the allowances for credit losses related to trade receivables for the twelve months ended December 31, 2023 and 2022, respectively:

	Year ended December 31, 2023	Year ended December 31, 2022
	(in thousands)	
Balance, beginning of period	$ —	$ —
Provision for credit losses	1,117	—
Charge-offs	(657)	—
Recoveries	—	—
Balance, end of period	$ 460	$ —

The components of accounts receivable are as follows:

	December 31, 2023	December 31, 2022
	(in thousands)	
Trade receivables	$ 218,424	$ 169,773
Allowance for doubtful accounts	(460)	—
Trade receivables, net	$ 217,964	$ 169,773

Note 6. Inventories, net

The components of inventories are as follows:

	December 31, 2023	December 31, 2022
	(in thousands)	
Raw materials	$ 231,200	$ 187,313
Work in process	45,373	35,069
Finished goods (completed systems)	29,909	20,024
Inventories, net	$ 306,482	$ 242,406

When recorded, inventory reserves are intended to reduce the carrying value of inventories to their net realizable value. We establish inventory reserves when conditions exist that indicate inventory may be in excess of anticipated demand or is obsolete based upon assumptions about future demand for our products or market conditions. We regularly evaluate our ability to realize the value of inventories based on a combination of factors including the following: forecasted sales and the size and utilization of our installed base, estimated product end of life dates, estimated current and future market value and new product introductions. Purchasing and usage alternatives are also explored to mitigate inventory exposure. In 2023, we recorded a decrease of $1.5 million in inventory reserves. At December 31, 2023 and 2022, inventories are stated net of inventory reserves of $5.2 million and $6.7 million, respectively.

During the years ended December 31, 2023, 2022 and 2021, we recorded charges to cost of sales of $5.2 million, $4.6 million and $3.8 million, respectively, to adjust inventories to their lower of cost or net realizable value.

We have inventory on consignment at customer locations at December 31, 2023 and 2022, of $6.5 million and $6.4 million, respectively.

Note 7. Property, Plant and Equipment, net

The components of property, plant and equipment are as follows:

	December 31, 2023	December 31, 2022
	(in thousands)	
Land and buildings	$ 21,802	$ 18,001
Machinery and equipment	41,547	34,728
Construction in process	17,055	10,189
Total cost	80,404	62,918
Accumulated depreciation	(26,433)	(23,254)
Property, plant and equipment, net	$ 53,971	$ 39,664

Depreciation expense was $6.2 million, $5.1 million and $4.2 million for the years ended December 31, 2023, 2022 and 2021, respectively.

Note 8. Assets Manufactured for Internal Use, net

Assets manufactured for internal use, included in other assets, are depreciated using the straight-line method over their 10 year estimated useful life. Their components are as follows:

	December 31, 2023	December 31, 2022
	(in thousands)	
Internal use assets	$ 76,273	$ 61,603
Construction in process	236	2,629
Total cost	76,509	64,232
Accumulated depreciation	(39,588)	(33,992)
Assets manufactured for internal use, net	$ 36,921	$ 30,240

These products are used for research and development, training, and customer demonstration purposes.

Depreciation expense was $5.6 million, $5.2 million and $5.3 million for the years ended December 31, 2023, 2022 and 2021, respectively.

Note 9. Leases

We have operating leases for manufacturing, office space, warehouse space, computer and office equipment and vehicles used in our business operations. We have a finance lease in relation to the 2015 sale-leaseback of our corporate headquarters in Beverly, Massachusetts. We review all agreements to determine if the agreement contains a lease component. An agreement contains a lease component if it provides the use of a specific physical space or a specific physical item.

We recognize operating lease obligations under Accounting Standards Codification - Leases (Topic 842). The guidance in Topic 842 requires recognition of lease assets and related liabilities on a discounted basis using the explicit or implicit discount rate stated within the agreement. We recognize a corresponding right-of-use asset, which is initially determined based upon the net present value of the associated liability and is adjusted for deferred costs and possible impairment, if any. For those lease agreements that do not indicate the applicable discount rate, we use our incremental borrowing rate. The value of the right-of-use asset is initially determined based on the net present value of the associated liability, and is adjusted for deferred costs and possible impairments, if any. We have made the following policy elections: (i) operating leases with an initial term of 12 months or less are not recorded on the consolidated balance sheet; (ii) we recognize lease expense for operating leases on a straight-line basis over the lease term; and (iii) we account for lease components and non-lease components that are fixed payments as one component. Some of our operating leases include one or more options to renew, with renewal terms that can extend the respective lease term 1 to 3 years. The exercise of lease renewal options is at our sole discretion. For lease extensions that are reasonably certain to occur, we have included the renewal periods in our calculation of the net present value of the lease obligation and related right-of-use asset. Certain leases also include options to purchase the leased property. The depreciable life of certain assets and leasehold improvements are limited by the expected lease term, unless there is a transfer of title or purchase option reasonably certain of exercise. Our lease agreements do not contain any material residual value guarantees or material restrictive covenants. The amounts of operating and finance lease right-of-use assets and related lease obligations recorded within our consolidated balance sheets are as follows:

Leases	**Classification**	**December 31, 2023**	**December 31, 2022**
Assets		**(in thousands)**	
Operating leases	Operating lease assets	$ 30,716	$ 12,146
Finance lease	Finance lease assets*	16,632	17,942
Total leased assets		$ 47,348	$ 30,088
Liabilities			
Current			
Operating	Other current liabilities	$ 4,978	$ 5,367
Finance	Current portion of finance lease obligation	1,511	1,229
Non-current			
Operating	Other long-term liabilities	25,724	6,931
Finance	Finance lease obligation	43,674	45,185
Total lease liabilities		$ 75,887	$ 58,712

*Finance lease assets are recorded net of accumulated depreciation of $46.4 million and include $0.6 million of prepaid financing costs as of December 31, 2023. Finance lease assets are recorded net of accumulated depreciation of $45.9 million and include $0.6 million of prepaid financing costs as of December 31, 2022.

All of our office locations support selling and servicing functions. We also have a manufacturing facility in South Korea. Lease expense, depreciation expense relating to finance leased assets and interest expense relating to our finance lease obligation recognized within our consolidated statement of operations for the twelve-month periods ended December

31, 2023, 2022 and 2021 are as follows:

Lease cost	Classification	Year ended December 31, 2023	2022	2021
Operating lease cost		(in thousands)		
Product / services*	Cost of revenue	$ 7,297	$ 5,427	$ 2,978
Research and development	Operating expenses	587	322	430
Sales and marketing*	Operating expenses	1,674	1,526	1,605
General and administrative*	Operating expenses	1,111	1,065	996
Total operating lease cost		$ 10,669	$ 8,340	$ 6,009
Finance lease cost				
Depreciation of leased assets	Cost of revenue, Research and development, Sales and marketing and General and administrative	$ 1,310	$ 1,296	$ 1,306
Interest on lease liabilities	Interest expense	4,874	4,992	5,086
Total finance lease cost		$ 6,184	$ 6,288	$ 6,392
Total lease cost		$ 16,853	$ 14,628	$ 12,401

* Product / services, sales and marketing and general and administrative expense also includes short-term lease and variable lease costs of approximately $2.1 million, $1.8 million and $1.9 million for the years ended December 31, 2023, 2022 2021, respectively.

Our corporate headquarters, shown below under finance leases, has an original lease term of 22 years. All other locations are treated as operating leases, with lease terms ranging from 1 to 16 years. The tables below reflect the minimum cash outflow regarding our current lease obligations as well as the weighted-average remaining lease term and weighted-average discount rates used in our calculation of our lease obligations and right-of-use assets:

Maturity of Lease Liabilities	Finance Leases	Operating Leases	Total Leases
		(in thousands)	
2024	$ 6,252	$ 6,529	$ 12,781
2025	5,930	4,970	10,900
2026	6,008	3,613	9,621
2027	6,128	2,530	8,658
2028	6,251	1,926	8,177
Thereafter	55,336	23,205	78,541
Total lease payments	$ 85,905	$ 42,773	$ 128,678
Less interest portion*	(40,720)	(12,071)	(52,791)
Finance lease and operating lease obligations	$ 45,185	$ 30,702	$ 75,887

* Finance lease interest calculated using the implied interest rate; operating lease interest calculated using estimated corporate borrowing rate.

The table above does not include options to renew lease terms that are not reasonably certain of being exercised, nor leases signed but not yet commenced as of December 31, 2023.

Lease term and discount rate	December 31, 2023
Weighted-average remaining lease term (years):	
Operating leases	11.5
Finance leases	13.1
Weighted-average discount rate:	
Operating leases	5.5%
Finance leases	10.5%

Our cash outflows from our operating leases include rent expense and other charges associated with these leases. These cash flows are included within the operating section of our statement of cash flows. Our cash flows from our finance lease include an interest and payment of principal component. The table below shows our cash outflows, by lease type and related section of our statement of cash flows, as well as the non-cash amount capitalized on our balance sheet in relation to our operating lease right-of-use assets:

Cash paid for amounts included in the measurement of lease liabilities	Year ended December 31, 2023	2022	2021
		(in thousands)	
Operating cash outflows from operating leases	$ 10,669	$ 8,340	$ 6,009
Operating cash outflows from finance leases	4,874	4,992	5,086
Financing cash outflows from finance leases	1,240	987	763
Operating lease assets obtained in exchange for operating lease liabilities	26,890	6,173	8,670
Finance lease assets obtained in exchange for new finance lease liabilities	—	—	—

Note 10. Product Warranty

We generally offer a one-year warranty for all of our systems, the terms and conditions of which vary depending upon the product sold. For all systems sold, we accrue a liability for the estimated cost of standard warranty at the time of system shipment and defer the portion of systems revenue attributable to the fair value of non-standard warranty. Costs for non-standard warranty are expensed as incurred. Factors that affect our warranty liability include the number of installed units, historical and anticipated product failure rates, material usage and service labor costs. We periodically assess the adequacy of our recorded liability and adjust the amount as necessary.

The changes in our product warranty liability are as follows:

	Year ended December 31, 2023	2022	2021
		(in thousands)	
Balance at January 1 (beginning of year)	$ 10,487	$ 6,924	$ 4,612
Warranties issued during the period	12,893	10,597	7,808
Settlements made during the period	(10,230)	(6,798)	(4,282)
Changes in estimate of liability for pre-existing warranties during the period	3,607	(236)	(1,214)
Balance at December 31 (end of period)	$ 16,757	$ 10,487	$ 6,924
Amount classified as current	$ 14,098	$ 8,299	$ 6,424
Amount classified as long-term (within other long-term liabilities)	2,659	2,188	500
Total warranty liability	$ 16,757	$ 10,487	$ 6,924

Note 11. Financing Arrangements

On January 30, 2015, we sold our corporate headquarters facility for the sale price of $48.9 million. As part of the sale, we also entered into a 22-year lease agreement with the buyer. The sale leaseback is accounted for as a financing arrangement for financial reporting purposes and, as such, we recorded a financing obligation of $45.2 million as of December 31, 2023, $1.5 million of which is classified within current liabilities. The associated lease payments include both an interest component and payment of principal, with the underlying liability being extinguished at the end of the original lease term. As of December 31, 2023, we had a security deposit of $5.9 million related to this lease.

On April 5, 2023, we terminated the Senior Secured Credit Facilities Credit Agreement, as amended (the "Credit Agreement"), with Silicon Valley Bank that we entered into on July 31, 2020. The Credit Agreement provided for a revolving credit facility covering borrowings and letters of credit in an aggregate principal amount not to exceed $40.0 million. Our obligations under the Credit Agreement were secured by a security interest, senior to any current and future debts and to any security interest, in all of our rights, title, and interest in, to and under substantially all of our assets, subject to limited exceptions, including permitted liens. Upon termination, these liens and all other obligations under the credit agreement, were released. A letter of credit issued by Silicon Valley Bank, a division of First Citizens Bank & Trust Company (successor by purchase to the Federal Deposit Insurance Corporation as Receiver for Silicon Valley Bridge Bank, N.A.) as successor to Silicon Valley Bank in the amount of $5.9 million securing our lease on our corporate headquarters was terminated on December 28, 2023. The underlying cash collateral held at Silicon Valley Bank was released on December 28, 2023, in conjunction with the letter of credit termination. A replacement, cash collateralized letter of credit was issued on December 14, 2023 with UBS Bank USA and is classified as long-term restricted cash on our balance sheet at December 31, 2023.

Note 12. Employee Benefit Plans

(a) Defined Contribution Plan

We maintain the Axcelis Long-Term Investment Plan, a defined contribution plan. Eligible employees may contribute up to 35% of their compensation on a before-tax basis subject to Internal Revenue Service ("IRS") limitations. Highly compensated employees may contribute up to 16% of their compensation on a before-tax basis subject to IRS limitations. In 2023, 2022 and 2021, we provided an employer match of 50% of employees' pre-tax contributions on the first 6% of eligible compensation. Total related matching contribution expense was $3.4 million, $2.7 million and $2.2 million, for 2023, 2022 and 2021, respectively.

(b) Other Compensation Plans

We operate in foreign jurisdictions that require lump sum benefits, payable based on statutory regulations, for voluntary or involuntary termination. Where required, an annual actuarial valuation of the benefit plans is obtained.

We have recorded an unfunded liability of $3.2 million and $3.5 million at December 31, 2023 and 2022, respectively, for costs associated with these compensation plans in foreign jurisdictions. The following table presents the classification of these liabilities in the Consolidated Balance Sheets:

	Year ended December 31,	
	2023	**2022**
	(in thousands)	
Long-term:		
Other long-term liabilities	3,160	3,516
Total liabilities	$ 3,160	$ 3,516

The expense recorded in connection with these plans was $1.7 million, $1.5 million and $1.5 million during the years ended December 31, 2023, 2022 and 2021, respectively.

Note 13. Stock Award Plans and Stock-Based Compensation

(a) Equity Incentive Plans

We maintain the Axcelis Technologies, Inc. 2012 Equity Incentive Plan (the "2012 Equity Plan" or the "Plan"), which became effective on May 2, 2012.

The 2012 Equity Plan, as amended, reserves 9.5 million shares of common stock, $0.001 par value, for grant and permits the issuance of options, stock appreciation rights, restricted stock, restricted stock units, stock equivalents and awards of shares of common stock that are not subject to restrictions or forfeiture to selected employees, directors, and consultants of the Company. The total number of shares reserved for issuance under the Plan is the sum of 7.76 million shares approved by the shareholders, and 1.78 million shares added in accordance with the terms of the Plan as a result of the expiration or forfeiture of awards granted under our prior equity plan. Shares that are not issued under an award (because such award expires, is terminated unexercised or is forfeited) revert back to the Plan.

The term of stock options granted under the Plan is specified in the award agreements. Unless a lesser term is otherwise specified by the Compensation Committee of the Company's Board of Directors, option awards under the 2012 Equity Plan will expire seven years from the date of grant. Under the terms of the Plan, the exercise price of a stock option may not be less than the fair market value of a share of the Company's common stock on the date of grant. Under the 2012 Equity Plan, fair market value is defined as the last reported sale price of a share of the Company's common stock on a national securities exchange as of any applicable date, as long as the Company's shares are traded on such exchange.

Stock options granted to employees generally vest over a period of four years, while stock options granted to non-employee members of the Company's Board of Directors generally vest over a period of six months and, once vested, are not affected by the director's termination of service to the Company. In limited circumstances, the Company may grant stock option awards with market-based vesting conditions, such as the Company's common stock price, or other performance conditions. Termination of service by an employee will cause options to cease vesting as of the date of termination, and in most cases, employees will have 90 days after termination to exercise options that were vested as of the termination of employment. In general, retiring employees will have one year after termination of employment to exercise vested options. The Company settles stock option exercises with newly issued common shares.

Restricted stock units granted to employees during 2023 had both service-based vesting provisions and performance-based vesting provisions. Restricted stock units granted to employees generally vest over a service period of four years, while restricted stock units granted to non-employee members of the Company's Board of Directors in 2023 vest over a service period of one year. We have granted restricted stock units to executive officers and other senior employees with performance vesting conditions, which may be subject to further service-based vesting terms. Unvested restricted stock unit awards expire upon termination of service to the Company. We settle restricted stock units upon vesting with newly issued common shares. No restricted stock was granted during the three year period ended December 31, 2023.

As of December 31, 2023, there were 0.8 million shares available for grant under the 2012 Equity Plan.

As of December 31, 2023, there were three thousand options outstanding and 0.5 million unvested restricted stock units outstanding under the 2012 Stock Plan.

(b) Employee Stock Purchase Plan

The 2020 Employee Stock Purchase Plan (the "2020 ESPP") provides our employees an opportunity to purchase common stock of the Company at less than market prices. Purchases are made through payroll deductions of up to 10% of the employee's salary as elected by the participant, subject to certain caps set forth in the 2020 ESPP. Employees may purchase the Company's common stock at 85% of its market price on the day the stock is purchased.

The 2020 ESPP is considered compensatory and as such, compensation expense has been recognized based on the benefit of the discounted stock price, amortized to compensation expense over each offering period of six months.

Compensation expense relating to the 2020 ESPP was approximately $0.4 million, $0.3 million, and $0.2 million for the years ended December 31, 2023, 2022 and 2021, respectively.

As of December 31, 2023, there were approximately 0.9 million shares reserved for issuance and available for purchase under the 2020 ESPP, with 9,965 shares purchased on that date to be issued pending settlement. Less than 0.1 million shares were purchased under the 2020 ESPP for each of the years ended December 31, 2023, 2022 and 2021.

(c) Valuation of Stock Options and Restricted Stock Units

For the purpose of valuing stock options with service conditions, we use the Black-Scholes option pricing model to calculate the grant-date fair value of an award.

	2021
Weighted-average expected volatility	53.07%
Weighted-average expected term	4.71 years
Risk-free interest rate	1.22%
Expected dividend yield	0.00%

There were no stock option awards granted in 2023 and 2022.

The fair value of the Company's restricted stock units is calculated based upon the fair market value of the Company's stock at the date of grant.

(d) Summary of Stock-based Compensation Expense

We use the straight-line attribution method to recognize expense for stock-based awards such that the expense associated with awards is evenly recognized throughout the period.

The amount of stock-based compensation recognized is based on the value of the portion of the awards that are ultimately expected to vest. We estimate forfeitures at the time of grant and revise them, if necessary, in subsequent periods, if actual forfeitures differ from those estimates. The term "forfeitures" is distinct from "cancellations" or "expirations" and represents only the unvested portion of the surrendered stock-based award. Based on a historical analysis, a forfeiture rate of 5% per year was applied to stock-based awards, including executive officer awards, for the years ended December 31, 2023, 2022 and 2021.

For the years ended December 31, 2023, 2022 and 2021, we recognized stock-based compensation expense of $18.3 million, $13.4 million and $12.1 million, respectively. We present the expenses related to stock-based compensation in the same expense line items as cash compensation paid to our employees. For the years ended December 31, 2023, 2022 and 2021, we used restricted stock units in our annual equity compensation program.

The benefit of tax deductions in excess of recognized compensation cost is reported in the consolidated statements of cash flows as part of cash flows from operating activities. Axcelis had tax deductions in excess of recognized compensation cost of $10.2 million for the year ended December 31, 2023 which resulted in a tax benefit of $2.2 million.

(e) Stock Option Awards

The following table summarizes the stock option activity for the year ended December 31, 2023:

	Options (in thousands)	Weighted Average Exercise Price	Weighted Average Remaining Contractual Term (years)	Aggregate Intrinsic Value (in thousands)
Outstanding at December 31, 2022	5	$ 43.33		
Granted	—	—		
Exercised	(2)	13.75		
Canceled	—	—		
Expired	—	—		
Outstanding at December 31, 2023	3	$ 61.81	4.9	$ 204
Exercisable at December 31, 2023	2	$ 61.81	4.9	$ 102
Options Vested at December 31, 2023	2	$ 61.81	4.9	$ 102

The total intrinsic value, which is defined as the difference between the market price at exercise and the price paid by the employee to exercise the options, for options exercised during the years ended December 31, 2023, 2022 and 2021 was $0.2 million, $5.4 million and $12.8 million, respectively.

For both the years ended December 31, 2023 and 2022, 750 stock options vested, respectively. No stock options vested for the year ended December 31, 2021. As of December 31, 2023, there was less than $0.1 million of unrecognized compensation cost related to non-vested stock options granted under the 2012 Equity Incentive Plan.

(f) Restricted Stock Units and Restricted Stock

Restricted stock units represent the Company’s unfunded and unsecured promise to issue shares of the common stock at a future date, subject to the terms of the Award Agreement issued under the 2012 Equity Incentive Plan. Restricted stock unit awards granted in 2023 included time vested share awards and awards with performance vesting conditions. Restricted stock awards are issued shares of common stock that are subject to forfeiture on terms described in the Award Agreement, and may be granted under the 2012 Equity Incentive Plan. No restricted stock awards were granted, or vested, during the years ended December 31, 2023, 2022 and 2021. The fair value of a restricted stock unit and restricted stock award is charged to expense ratably over the applicable service period. The purpose of these awards is to assist in attracting and retaining highly competent employees and directors and to act as an incentive in motivating selected employees and directors to achieve long-term corporate objectives.

Changes in the Company’s non-vested restricted stock units for the year ended December 31, 2023 is as follows:

	Shares/units (in thousands)	Weighted-Average Grant Date Fair Value per Share
Outstanding at December 31, 2022	725	$ 39.23
Granted	220	125.11
Vested	(397)	131.71
Forfeited	(10)	51.94
Outstanding at December 31, 2023	538	$ 77.22

The weighted average grant-date fair value of restricted stock units granted for the years ended December 31, 2023, 2022 and 2021 was $125.11, $55.47 and $38.54, respectively. Most restricted stock units provide for net share settlement to cover the employee’s personal income tax withholding obligations on vesting of the employee’s restricted stock units. Vesting activity above reflects shares vested before net share settlement. As of December 31, 2023, there was $31.7 million of total forfeiture-adjusted unrecognized compensation cost related to non-vested restricted stock units granted under the 2012 Equity Incentive Plan. That cost is expected to be recognized over a weighted-average period of 2.7 years.

Note 14. Stockholders' Equity

We may issue up to 75 million shares of common stock without additional shareholder approval. At December 31, 2023 and 2022, there were 32.7 million and 32.8 million outstanding shares of common stock, respectively.

Note 15. Fair Value Measurements

Fair value is defined as the exchange price that would be received for an asset or paid to transfer a liability (an exit price) in the principal or most advantageous market for the asset or liability in an orderly transaction between market participants on the measurement date.

(a) Fair Value Hierarchy

The accounting guidance for fair value measurement requires an entity to maximize the use of observable inputs and minimize the use of unobservable inputs when measuring fair value. The standard establishes a fair value hierarchy based on the level of independent, objective evidence surrounding the inputs used to measure fair value. A financial instrument's categorization within the fair value hierarchy is based upon the lowest level of input that is significant to the fair value measurement. The fair value hierarchy is as follows:

Level 1—applies to assets or liabilities for which there are quoted prices in active markets for identical assets or liabilities.

Level 2—applies to assets or liabilities for which there are inputs other than quoted prices that are observable for the asset or liability, such as quoted prices for similar assets or liabilities in active markets; quoted prices for identical assets or liabilities in markets with insufficient volume or infrequent transactions (less active markets); or model-derived valuations in which significant inputs are observable or can be derived principally from, or corroborated by, observable market data.

Level 3—applies to assets or liabilities for which there are unobservable inputs to the valuation methodology that are significant to the measurement of the fair value of the assets or liabilities.

(b) Assets and Liabilities Measured at Fair Value

Our money market funds and short-term investments with maturities of 90 days or less at time of purchase are included in cash and cash equivalents in the consolidated balance sheets. Short-term investments with maturities greater than 90 days but not greater than 365 days are included in short-term investments in the consolidated balance sheets.

The following table sets forth Company's assets which are measured at fair value by level within the fair value hierarchy.

	December 31, 2023 Fair Value Measurements			
	Level 1	**Level 2**	**Level 3**	**Total**
		(in thousands)		
Assets				
Cash equivalents and other short-term investments:				
Cash equivalents (money market funds, U.S. Government Securities and Agency Investments)	$ 118,278	$ —	$ —	$ 118,278
Short-term investments (U.S. Government Securities and Agency Investments)	339,240	—	—	339,240
Total	$ 457,518	$ —	$ —	$ 457,518

	December 31, 2022 Fair Value Measurements			
	Level 1	Level 2	Level 3	Total
	(in thousands)			
Assets				
Cash equivalents and other short-term investments:				
Cash equivalents (money market funds, U.S. Government Securities and Agency Investments)	$ 111,771	$ 25,000	$ —	$ 136,771
Short-term investments (U.S. Government Securities and Agency Investments)	245,247	—	—	245,247
Total	$ 357,018	$ 25,000	$ —	$ 382,018

(c) Other Financial Instruments

The carrying amounts reflected in the consolidated balance sheets for accounts receivable, prepaid expenses and other current and non-current assets, restricted cash, accounts payable and accrued expenses approximate fair value due to their short-term maturities.

Note 16. Commitments and Contingencies

In addition to the finance and operating leases discussed in Note 9, we have purchase commitments and other contingency considerations.

(a) Purchase Commitments

We have contracts and purchase orders for inventory and other expenditures of $304.1 million at December 31, 2023, approximately $293.8 million are expected to occur in 2024.

(b) Litigation

We are not presently a party to any litigation that we believe might have a material adverse effect on our business operations. We are, from time to time, a party to litigation that arises in the normal course of our business operations.

(c) Indemnifications

Our system sales agreements typically include provisions under which we agree to take certain actions, provide certain remedies and defend our customers against third-party claims of intellectual property infringement under specified conditions and to indemnify customers against any damage and costs awarded in connection with such claims. We have not incurred any material costs as a result of such indemnifications and have not accrued any liabilities related to such obligations in the accompanying consolidated financial statements.

Note 17. Business Segment and Geographic Region Information

We operate in one business segment, which is the manufacture of capital equipment for the semiconductor chip manufacturing industry. The principal market for semiconductor capital equipment is semiconductor chip manufacturers. Substantially all sales are made directly by us to our customers located in the United States, Europe and Asia Pacific.

Our ion implantation systems product line includes high current, medium current and high energy implanters. Other legacy processing products include curing and thermal processing systems. In addition to new equipment, we provide post-sales equipment service and support, including spare parts, equipment upgrades, used equipment, maintenance services and customer training.

Revenue by product lines is as follows:

	Year ended December 31, 2023	2022	2021
		(in thousands)	
Ion implantation systems and services	$ 1,111,278	$ 898,132	$ 645,504
Other systems and services	19,326	21,866	16,924
Total revenue	$ 1,130,604	$ 919,998	$ 662,428

Revenue and long-lived assets by geographic region, based on the physical location of the operation recording the sale or the asset, are as follows:

	Revenue	Long-Lived Assets
	(in thousands)	
2023		
United States	$ 749,288	$ 86,482
Europe	45,583	382
Asia Pacific	335,733	4,040
	$ 1,130,604	$ 90,904
2022		
United States	$ 634,081	$ 66,227
Europe	38,963	212
Asia Pacific	246,954	3,464
	$ 919,998	$ 69,903
2021		
United States	$ 519,408	$ 63,590
Europe	36,622	191
Asia Pacific	106,398	3,194
	$ 662,428	$ 66,975

Long-lived assets consist of property, plant and equipment, net, and assets manufactured for internal use, net. Operations in Asia Pacific consist of manufacturing, sales and service organizations. Operations in Europe consist of sales and service organizations.

International revenue, which includes export sales from U.S. manufacturing facilities to foreign customers and sales by foreign subsidiaries and branches, was $950.4 million (84.1% of total revenue), $776.3 million (84.4% of total revenue) and $613.5 million (92.6% of total revenue) in 2023, 2022 and 2021, respectively.

Note 18. Income Taxes

Income before income taxes is as follows:

	Year ended December 31,		
	2023	2022 (in thousands)	2021
United States	$ 270,842	$ 198,028	$ 116,380
Foreign	7,757	6,857	4,048
Income before income taxes	$ 278,599	$ 204,885	$ 120,428

Provision for income taxes is as follows:

	Year ended December 31,		
	2023	2022 (in thousands)	2021
Current:			
United States			
Federal	$ 46,871	$ 8,430	$ —
State	1,985	1,716	82
Foreign	3,498	3,124	1,439
Total current	52,354	13,270	1,521
Deferred:			
Federal	(18,526)	9,097	20,521
State	(440)	(102)	406
Foreign	(1,052)	(459)	(670)
Total deferred	(20,018)	8,536	20,257
Income tax provision	$ 32,336	$ 21,806	$ 21,778

Reconciliation of income taxes at the United States Federal statutory rate to the effective income tax rate of 11.6% is as follows:

	Year ended December 31,		
	2023	2022 (in thousands)	2021
Income taxes at the United States statutory rate	$ 58,506	$ 43,026	$ 25,290
State income taxes	1,033	1,075	387
Effect of change in valuation allowance	1,978	680	(1,443)
Foreign income tax rate differentials	329	289	152
Stock-based compensation	(6,718)	(3,818)	(3,658)
Internal revenue code section 162(m) limitation	4,488	2,692	1,481
Credit expirations	784	1,181	2,342
Rate change	44	94	159
Credit generation	(6,900)	(4,764)	(3,096)
Discrete items, net	2,161	206	72
GILTI inclusion	45	69	301
Foreign-derived intangible income	(24,052)	(20,526)	—
Other, net	638	1,602	(209)
Income tax provision	$ 32,336	$ 21,806	$ 21,778

Significant components of long-term deferred income taxes are as follows:

	Year ended December 31, 2023	2022
	(in thousands)	
Deferred tax assets:		
State net operating loss carryforwards	$ 96	$ 291
Foreign net operating loss carryforwards	182	276
Federal tax credit carryforwards	1,999	—
State tax credit carryforwards	9,560	8,683
Property, plant and equipment	6,979	8,755
Operating lease liability	5,564	1,564
Accrued compensation	242	276
Inventories	804	1,613
Stock compensation	1,790	1,620
Warranty	3,108	1,993
Deferred revenue	6,389	4,501
Capitalized research and development costs	38,036	18,067
Gross deferred tax assets	74,749	47,639
Valuation allowance	(10,963)	(8,370)
Net deferred tax assets	63,786	39,269
Deferred tax liabilities:		
Intangible assets	—	(176)
Right-of-use asset	(9,155)	(5,400)
Other	(1,203)	(1,992)
Gross deferred tax liabilities	(10,358)	(7,568)
Deferred taxes, net	$ 53,428	$ 31,701

Changes in tax rates and tax laws are accounted for in the period of enactment. Our deferred tax assets and liabilities are measured at the enacted tax rate expected to apply when these temporary differences are expected to be realized or settled.

At December 31, 2023, we had $53.4 million of net deferred tax assets worldwide relating to capitalized R&D costs and other temporary differences, which are available to reduce income taxes in future years. The increase in our deferred tax assets from the prior year was primarily due to a $20.0 million increase relating to capitalized R&D costs. At December 31, 2023, we maintained a $11.0 million valuation allowance in the U.S. against certain tax credits and state net operating losses due to the uncertainty of their realization based on long-term Company forecasts and the expiration dates on these attributes. This represents an increase of $2.6 million from the prior year.

At December 31, 2023, we had state net operating loss carryforwards of $0.1 million. State net operating losses will expire between 2024 and 2034. At December 31, 2023, we have foreign net operating loss carryforwards of $0.2 million. The majority of our foreign net operating losses have an unlimited carryforward period.

At December 31, 2023, we had research and development and other tax credit carryforwards of $15.2 million. These carry forwards are subject to an uncertain tax position reserve of $3.0 million. These credits can be used to reduce future federal and state income tax liabilities and expire principally between 2024 and 2035.

A provision of the Tax Cuts and Jobs Act (“TCJA”) took effect in 2022, creating a significant change to our treatment of research and experimental expenditures. Historically, businesses had the option of deducting R&D expenses in the year incurred or capitalizing and amortizing the costs over five years. The TCJA provision eliminates this option and requires R&D expenses associated with research conducted in the U.S. to be capitalized and amortized over a five-year period. For expenses associated with research outside of the United States, R&D expenses are capitalized and amortized over a 15-year period. The Company has included the tax impact of capitalizing and amortizing these costs over the required periods in their tax provision for the year ended December 31, 2023.

We consider the undistributed earnings of our foreign subsidiaries as of December 31, 2023 to be indefinitely reinvested and, accordingly, no U.S. income taxes have been provided thereon. As of December 31, 2023, the amount of cash associated with indefinitely reinvested foreign earnings was approximately $11.8 million. We have not, nor do we anticipate the need to, repatriate funds to the United States to satisfy domestic liquidity needs arising in the ordinary course of business, including liquidity needs associated with our domestic debt service requirements.

We and our subsidiaries file income tax returns in the U.S. federal jurisdiction and various states and foreign jurisdictions. We and most foreign subsidiaries are subject to income tax examinations by tax authorities for all years dating back to 2009. Our policy is to recognize interest related to unrecognized tax benefits as interest expense and penalties as operating expenses. We believe that we have appropriate support for the income tax positions taken and to be taken on our tax returns and that our accruals for tax liabilities are adequate for all open years based on an assessment of many factors including past experience and interpretations of tax law applied to the facts of each matter.

At December 31, 2023, we had unrecognized tax benefits related to uncertain tax positions of $11.9 million, $8.3 million of which is recorded as a long-term liability, and the remainder of which reduced the Company's state deferred tax assets and the offsetting valuation allowance. We recognized $0.5 million in interest and penalty expenses for the year ended December 31, 2023 relating to these uncertain tax positions. These unrecognized tax benefits, if recognized, would reduce the effective tax rate and also reverse associated accrued interest and penalty expenses.

A reconciliation of the beginning and ending balance of unrecognized tax benefits are as follows:

	Year ended December 31,		
	2023	2022	2021
		(in thousands)	
Balance at beginning of year	$ 10,443	$ 9,961	$ 10,044
Decrease in unrecognized tax benefits as a result of tax positions taken during a prior period	(271)	(122)	(546)
Decreases in unrecognized tax benefits related to settlements with tax authorities	—	(708)	—
Reductions to unrecognized tax benefits as a result of a lapse of the applicable statute of limitation	—	—	(472)
Increases in unrecognized tax benefits as a result of tax positions taken during the current period	1,754	1,312	935
Balance at end of year	$ 11,926	$ 10,443	$ 9,961
Recorded as other long-term liability	$ 8,344	$ 7,190	$ —
Recorded as a decrease in deferred tax assets	3,582	3,253	9,961
Balance at end of year	$ 11,926	$ 10,443	$ 9,961

Schedule II—Valuation and Qualifying Accounts
Axcelis Technologies, Inc.
(In thousands)

	Balance at Beginning of Period	Charged to Costs and Expenses	Deductions	Balance at End of Period
Year ended December 31, 2023				
Allowance for doubtful accounts and returns	$ —	$ 1,117	$ 657	$ 460
Deferred tax valuation allowance	8,370	3,196	603	10,963
Year ended December 31, 2022				
Allowance for doubtful accounts and returns	$ —	$ —	$ —	$ —
Deferred tax valuation allowance	7,689	1,529	848	8,370
Year ended December 31, 2021				
Allowance for doubtful accounts and returns	$ —	$ —	$ —	$ —
Deferred tax valuation allowance	9,133	780	2,224	7,689

Exhibit Index

Exhibit No.	Description
23.1	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm. Filed herewith.
31.1	Certification of the Principal Executive Officer under Exchange Act Rule 13a-14(a)/15d-14(a) (Section 302 of the Sarbanes-Oxley Act), dated February 28, 2024. Filed herewith.
31.2	Certification of the Principal Financial Officer under Exchange Act Rule 13a-14(a)/15d-14(a) (Section 302 of the Sarbanes-Oxley Act), dated February 28, 2024. Filed herewith.
32.1	Certification of the Principal Executive Officer pursuant to Section 1350 of Chapter 63 of title 18 of the United States Code (Section 906 of the Sarbanes-Oxley Act), dated February 28, 2024. Filed herewith.
32.2	Certification of the Principal Financial Officer pursuant to Section 1350 of Chapter 63 of title 18 of the United States Code (Section 906 of the Sarbanes-Oxley Act), dated February 28, 2024. Filed herewith.
101	The following materials from the Company's Form 10-K for the year ended December 31, 2023, formatted in eXtensible Business Reporting Language (XBRL): (i) Consolidated Statements of Operations, (ii) Consolidated Statement of Comprehensive Income (iii) Consolidated Balance Sheets, (iv) Consolidated Statements of Equity, (v) Consolidated Statements of Cash Flows, and (vi) Notes to Consolidated Financial Statements.
104	Cover Page Interactive Data File (formatted as iXBRL and contained in Exhibit 101).

Signatures

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the Registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

AXCELIS TECHNOLOGIES, INC.

By: /s/ RUSSELL J. LOW
Russell J. Low,
President and Chief Executive Officer

Dated: February 28, 2024

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the Registrant and in the capacities and on the date indicated.

Signature	Title	Date
/s/ RUSSELL J. LOW Russell J. Low	Director and Principal Executive Officer	February 28, 2024
/s/ JAMES G. COOGAN James G. Coogan	Principal Accounting and Financial Officer	February 28, 2024

Exhibit 23.1

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the following Registration Statements:

(1) Registration Statements (Form S-8 Nos. 333-181750, 333-188967, 333-196157, 333-204544, 333-211673, 333-218225 and 333-231634) pertaining to the 2012 Equity Incentive Plan of Axcelis Technologies, Inc.,

(2) Registration Statement (Form S-8 No. 333-238770) pertaining to the 2020 Employee Stock Purchase Plan of Axcelis Technologies, Inc.,

(3) Registration Statement (Form S-8 No. 333-120356) pertaining to the 2000 Stock Plan and 2012 Equity Incentive Plan, and

(4) Registration Statement (Form S-3 No. 333-273639) and related Prospectus of Axcelis Technologies, Inc. for the registration of common stock, preferred stock, warrants, debt securities and units;

of our reports dated February 23, 2024, with respect to the consolidated financial statements and schedule of Axcelis Technologies, Inc. and the effectiveness of internal control over financial reporting of Axcelis Technologies, Inc. included in this Amendment No. 1 on Form 10-K/A of Axcelis Technologies, Inc. for the year ended December 31, 2023.

/s/ Ernst & Young LLP

Boston, Massachusetts
February 28, 2024

CERTIFICATION
of the Principal Executive Officer
Pursuant to Rule 13a-14(a)/15d-14(a) (implementing Section 302 of the Sarbanes-Oxley Act)

I, Russell J. Low, certify that:

1. I have reviewed this annual report on Form 10-K/A (Amendment #1) of Axcelis Technologies, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the company's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2024

/s/ RUSSELL J. LOW

Russell J. Low,
Chief Executive Officer and President

CERTIFICATION
of the Principal Financial Officer
Pursuant to Rule 13a-14(a)/15d-14(a) (implementing Section 302 of the Sarbanes-Oxley Act)

I, James Coogan, certify that:

1. I have reviewed this annual report on Form 10-K/A (Amendment #1) of Axcelis Technologies, Inc.;

2. Based on my knowledge, this report does not contain any untrue statement of a material fact or omit to state a material fact necessary to make the statements made, in light of the circumstances under which such statements were made, not misleading with respect to the period covered by this report;

3. Based on my knowledge, the financial statements, and other financial information included in this report, fairly present in all material respects the financial condition, results of operations and cash flows of the company as of, and for, the periods presented in this report;

4. The company's other certifying officer(s) and I are responsible for establishing and maintaining disclosure controls and procedures (as defined in Exchange Act Rules 13a-15(e) and 15d-15(e)) and internal control over financial reporting (as defined in Exchange Act Rules 13a-15(f) and 15d-15(f)) for the company and have:

   (a) Designed such disclosure controls and procedures, or caused such disclosure controls and procedures to be designed under our supervision, to ensure that material information relating to the company, including its consolidated subsidiaries, is made known to us by others within those entities, particularly during the period in which this report is being prepared;

   (b) Designed such internal control over financial reporting, or caused such internal control over financial reporting to be designed under our supervision, to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles;

   (c) Evaluated the effectiveness of the company's disclosure controls and procedures and presented in this report our conclusions about the effectiveness of the disclosure controls and procedures, as of the end of the period covered by this report based on such evaluation; and

   (d) Disclosed in this report any change in the company's internal control over financial reporting that occurred during the company's most recent fiscal quarter (the registrant's fourth fiscal quarter in the case of an annual report) that has materially affected, or is reasonably likely to materially affect, the company's internal control over financial reporting; and

5. The company's other certifying officer(s) and I have disclosed, based on our most recent evaluation of internal control over financial reporting, to the company's auditors and the audit committee of the company's board of directors (or persons performing the equivalent functions):

   (a) All significant deficiencies and material weaknesses in the design or operation of internal control over financial reporting which are reasonably likely to adversely affect the company's ability to record, process, summarize and report financial information; and

   (b) Any fraud, whether or not material, that involves management or other employees who have a significant role in the registrant's internal control over financial reporting.

Date: February 28, 2024

/s/ JAMES COOGAN
James Coogan,
Executive Vice President and Chief Financial Officer

AXCELIS TECHNOLOGIES, INC.
Certification of the Chief Executive Officer
Pursuant to Section 1350 of Chapter 63 of title 18 of the United States Code

The undersigned Chief Executive Officer of Axcelis Technologies, Inc., a Delaware corporation, hereby certifies, for the purposes of Section 1350 of Chapter 63 of title 18 of the United States Code (as implemented by Section 906 of the Sarbanes-Oxley Act of 2002) as follows:

This Form 10-K/A (Amendment #1) annual report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) and the information contained herein fairly presents, in all material respects, the financial condition and results of operations of the Company.

IN WITNESS WHEREOF, the undersigned has executed this Certification as of February 28, 2024.

/s/ RUSSELL J. LOW

Russell J. Low
Chief Executive Officer and President of Axcelis Technologies, Inc.

AXCELIS TECHNOLOGIES, INC.
Certification of the Chief Financial Officer
Pursuant to Section 1350 of Chapter 63 of title 18 of the United States Code

The undersigned Chief Financial Officer of Axcelis Technologies, Inc., a Delaware corporation, hereby certifies, for the purposes of Section 1350 of Chapter 63 of title 18 of the United States Code (as implemented by Section 906 of the Sarbanes-Oxley Act of 2002) as follows:

This Form 10-K/A (Amendment #1) annual report fully complies with the requirements of section 13(a) or 15(d) of the Securities Exchange Act of 1934 (15 U.S.C. 78m or 78o(d)) and the information contained herein fairly presents, in all material respects, the financial condition and results of operations of the Company.

IN WITNESS WHEREOF, the undersigned has executed this Certification as of February 28, 2024.

/s/ JAMES COOGAN
James Coogan
Executive Vice President and Chief Financial Officer of Axcelis Technologies, Inc.