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

FORM 10-Q

(Mark One)

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

For the quarterly period ended June 30, 2024

OR

☐ **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 1-12031



UNIVERSAL DISPLAY CORPORATION
(Exact name of registrant as specified in its charter)

Pennsylvania	**23-2372688**
(State or other jurisdiction of incorporation or organization)	**(I.R.S. Employer Identification No.)**
250 Phillips Boulevard, Ewing, New Jersey	**08618**
(Address of principal executive offices)	**(Zip Code)**

Registrant's telephone number, including area code: (609) 671-0980

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

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, $0.01 par value	OLED	The Nasdaq Stock Market LLC

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 check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (§ 232.405 of this chapter) 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	☐	Emerging growth company	☐
Non-accelerated filer	☐	Smaller reporting company	☐		

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

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

As of July 25, 2024, the registrant had outstanding 47,452,149 shares of common stock.

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PART I – FINANCIAL INFORMATION

ITEM 1. FINANCIAL STATEMENTS

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

CONSOLIDATED BALANCE SHEETS

(UNAUDITED)

(in thousands, except share and per share data)

	June 30, 2024	December 31, 2023
ASSETS		
CURRENT ASSETS:		
Cash and cash equivalents	$ 92,856	$ 91,985
Short-term investments	437,667	422,137
Accounts receivable	124,386	139,850
Inventory	171,843	175,795
Other current assets	132,729	87,365
Total current assets	959,481	917,132
PROPERTY AND EQUIPMENT, net of accumulated depreciation of $153,523 and $143,908	185,474	175,150
ACQUIRED TECHNOLOGY, net of accumulated amortization of $195,235 and $186,850	81,940	90,325
OTHER INTANGIBLE ASSETS, net of accumulated amortization of $11,125 and $10,414	6,163	6,874
GOODWILL	15,535	15,535
INVESTMENTS	362,459	299,548
DEFERRED INCOME TAXES	66,664	59,108
OTHER ASSETS	98,845	105,289
TOTAL ASSETS	$ 1,776,561	$ 1,668,961
LIABILITIES AND SHAREHOLDERS' EQUITY		
CURRENT LIABILITIES:		
Accounts payable	$ 23,636	$ 10,933
Accrued expenses	58,624	52,080
Deferred revenue	63,784	47,713
Other current liabilities	5,955	8,096
Total current liabilities	151,999	118,822
DEFERRED REVENUE	6,732	12,006
RETIREMENT PLAN BENEFIT LIABILITY	53,870	52,249
OTHER LIABILITIES	37,122	38,658
Total liabilities	249,723	221,735
COMMITMENTS AND CONTINGENCIES (Note 18)		
SHAREHOLDERS' EQUITY:		
Preferred Stock, par value $0.01 per share, 5,000,000 shares authorized, 200,000 shares of Series A Nonconvertible Preferred Stock issued and outstanding (liquidation value of $7.50 per share or $1,500)	2	2
Common Stock, par value $0.01 per share, 200,000,000 shares authorized, 48,814,273 and 48,731,026 shares issued, and 47,448,625 and 47,365,378 shares outstanding, at June 30, 2024 and December 31, 2023, respectively	488	487
Additional paid-in capital	712,234	699,554
Retained earnings	860,058	789,553
Accumulated other comprehensive loss	(4,660)	(1,086)
Treasury stock, at cost (1,365,648 shares at June 30, 2024 and December 31, 2023)	(41,284)	(41,284)
Total shareholders' equity	1,526,838	1,447,226
TOTAL LIABILITIES AND SHAREHOLDERS' EQUITY	$ 1,776,561	$ 1,668,961

The accompanying notes are an integral part of these Consolidated Financial Statements.

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF INCOME

(UNAUDITED)

(in thousands, except share and per share data)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
REVENUE:				
Material sales	$ 95,442	$ 77,107	$ 188,726	$ 147,297
Royalty and license fees	59,551	64,399	127,819	119,609
Contract research services	3,512	5,059	7,219	10,126
Total revenue	158,505	146,565	323,764	277,032
COST OF SALES	38,328	32,139	75,297	65,109
Gross margin	120,177	114,426	248,467	211,923
OPERATING EXPENSES:				
Research and development	36,826	32,318	74,811	63,741
Selling, general and administrative	19,841	17,077	39,093	32,473
Amortization of acquired technology and other intangible assets	4,549	3,994	9,097	6,885
Patent costs	2,401	2,229	4,383	4,484
Royalty and license expense	123	169	1,774	333
Total operating expenses	63,740	55,787	129,158	107,916
OPERATING INCOME	56,437	58,639	119,309	104,007
Interest income, net	9,913	6,198	19,481	13,165
Other loss, net	(1,460)	(784)	(3,403)	(1,487)
Interest and other loss, net	8,453	5,414	16,078	11,678
INCOME BEFORE INCOME TAXES	64,890	64,053	135,387	115,685
INCOME TAX EXPENSE	(12,553)	(14,375)	(26,197)	(26,168)
NET INCOME	$ 52,337	$ 49,678	$ 109,190	$ 89,517
NET INCOME PER COMMON SHARE:				
BASIC	$ 1.10	$ 1.04	$ 2.29	$ 1.87
DILUTED	$ 1.10	$ 1.04	$ 2.29	$ 1.87
WEIGHTED AVERAGE SHARES USED IN COMPUTING NET INCOME PER COMMON SHARE:				
BASIC	47,549,843	47,572,971	47,553,969	47,548,404
DILUTED	47,628,113	47,618,115	47,628,470	47,593,657
CASH DIVIDENDS DECLARED PER COMMON SHARE	$ 0.40	$ 0.35	$ 0.80	$ 0.70

The accompanying notes are an integral part of these Consolidated Financial Statements.

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(UNAUDITED)

(in thousands)

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
NET INCOME	$ 52,337	$ 49,678	$ 109,190	$ 89,517
OTHER COMPREHENSIVE (LOSS) INCOME, NET OF TAX:				
Unrealized (loss) gain on available-for-sale securities, net of tax of none, $296, none, and ($438) respectively	(310)	(1,059)	(2,976)	1,568
Actuarial loss on retirement plan, net of tax of $246, none, $246 and none, respectively	(761)	—	(761)	—
Amortization of prior service cost, actuarial loss and curtailment charge for retirement plan included in net periodic pension costs, net of tax of ($75), ($71), ($77), and ($142) respectively	248	253	256	506
Change in cumulative foreign currency translation adjustment	(43)	(29)	(93)	66
TOTAL OTHER COMPREHENSIVE (LOSS) INCOME	(866)	(835)	(3,574)	2,140
COMPREHENSIVE INCOME	$ 51,471	$ 48,843	$ 105,616	$ 91,657

The accompanying notes are an integral part of these Consolidated Financial Statements.

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

(UNAUDITED)

(in thousands, except for share data)

Three Months Ended June 30, 2024

	Series A Nonconvertible Preferred Stock		Common Stock		Additional Paid-in	Retained	Accumulated Other Comprehensive	Treasury Stock		Total Shareholders'
	Shares	Amount	Shares	Amount	Capital	Earnings	Loss	Shares	Amount	Equity
BALANCE, MARCH 31, 2024	200,000	$ 2	48,804,964	$ 488	$ 702,609	$ 826,879	$ (3,794)	1,365,648	$ (41,284)	$ 1,484,900
Net income	—	—	—	—	—	52,337	—	—	—	52,337
Other comprehensive loss	—	—	—	—	—	—	(866)	—	—	(866)
Cash dividend	—	—	—	—	—	(19,158)	—	—	—	(19,158)
Stock-based compensation and ESPP activity, net of taxes withheld			9,309	—	9,625	—	—	—	—	9,625
BALANCE, JUNE 30, 2024	200,000	$ 2	48,814,273	$ 488	$ 712,234	$ 860,058	$ (4,660)	1,365,648	$ (41,284)	$ 1,526,838

Six Months Ended June 30, 2024

	Series A Nonconvertible Preferred Stock		Common Stock		Additional Paid-in	Retained	Accumulated Other Comprehensive	Treasury Stock		Total Shareholders'
	Shares	Amount	Shares	Amount	Capital	Earnings	Loss	Shares	Amount	Equity
BALANCE, DECEMBER 31, 2023	200,000	$ 2	48,731,026	$ 487	$ 699,554	$ 789,553	$ (1,086)	1,365,648	$ (41,284)	$ 1,447,226
Net income	—	—	—	—	—	109,190	—	—	—	109,190
Other comprehensive loss	—	—	—	—	—	—	(3,574)	—	—	(3,574)
Cash dividend	—	—	—	—	—	(38,685)	—	—	—	(38,685)
Stock-based compensation and ESPP activity, net of taxes withheld	—	—	83,247	1	12,680	—	—	—	—	12,681
BALANCE, JUNE 30, 2024	200,000	$ 2	48,814,273	$ 488	$ 712,234	$ 860,058	$ (4,660)	1,365,648	$ (41,284)	$ 1,526,838

The accompanying notes are an integral part of these Consolidated Financial Statements.

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF SHAREHOLDERS' EQUITY

(UNAUDITED)

(in thousands, except for share data)

Three Months Ended June 30, 2023

	Series A Nonconvertible Preferred Stock		Common Stock		Additional Paid-in	Retained	Accumulated Other Comprehensive	Treasury Stock		Total Shareholders'
	Shares	Amount	Shares	Amount	Capital	Earnings	Loss	Shares	Amount	Equity
BALANCE, MARCH 31, 2023	200,000	$ 2	48,697,467	$ 487	$ 679,390	$ 676,347	$ (15,477)	1,365,648	$ (41,284)	$ 1,299,465
Net income	—	—	—	—	—	49,678	—	—	—	49,678
Other comprehensive loss	—	—	—	—	—	—	(835)	—	—	(835)
Cash dividend	—	—	—	—	—	(16,653)	—	—	—	(16,653)
Stock-based compensation and ESPP activity, net of taxes withheld	—	—	9,465	—	7,111	—	—	—	—	7,111
BALANCE, JUNE 30, 2023	200,000	$ 2	48,706,932	$ 487	$ 686,501	$ 709,372	$ (16,312)	1,365,648	$ (41,284)	$ 1,338,766

Six Months Ended June 30, 2023

	Series A Nonconvertible Preferred Stock		Common Stock		Additional Paid-in	Retained	Accumulated Other Comprehensive	Treasury Stock		Total Shareholders'
	Shares	Amount	Shares	Amount	Capital	Earnings	Loss	Shares	Amount	Equity
BALANCE, DECEMBER 31, 2022	200,000	$ 2	49,136,030	$ 491	$ 681,335	$ 653,277	$ (18,452)	1,365,648	$ (41,284)	$ 1,275,369
Net income	—	—	—	—	—	89,517	—	—	—	89,517
Other comprehensive income	—	—	—	—	—	—	2,140	—	—	2,140
Cash dividend	—	—	—	—	—	(33,422)	—	—	—	(33,422)
Stock-based compensation and ESPP activity, net of taxes withheld	—	—	(429,098)	(4)	5,166	—	—	—	—	5,162
BALANCE, JUNE 30, 2023	200,000	$ 2	48,706,932	$ 487	$ 686,501	$ 709,372	$ (16,312)	1,365,648	$ (41,284)	$ 1,338,766

The accompanying notes are an integral part of these Consolidated Financial Statements.

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

CONSOLIDATED STATEMENTS OF CASH FLOWS

(UNAUDITED)

(in thousands)

	Six Months Ended June 30,	
	2024	**2023**
CASH FLOWS FROM OPERATING ACTIVITIES:		
Net income	$ 109,190	$ 89,517
Adjustments to reconcile net income to net cash provided by operating activities:		
Depreciation	13,092	13,207
Amortization of intangibles	9,097	6,885
Amortization of premium and discount on investments, net	(4,276)	(6,845)
Stock-based compensation	18,523	11,320
Deferred income tax benefit	(7,402)	(12,782)
Retirement plan expense, net of benefit payments	962	1,397
Decrease (increase) in assets:		
Accounts receivable	15,464	(16,726)
Inventory	3,952	7,365
Other current assets	(45,364)	12,038
Other assets	6,444	7,665
Increase (decrease) in liabilities:		
Accounts payable and accrued expenses	12,367	(17,651)
Other current liabilities	(2,141)	(20,811)
Deferred revenue	10,797	(15,736)
Other liabilities	(1,536)	(1,445)
Net cash provided by operating activities	139,169	57,398
CASH FLOWS FROM INVESTING ACTIVITIES:		
Purchases of property and equipment	(16,334)	(27,274)
Purchases of intangibles	—	(66,063)
Purchases of investments	(174,757)	(115,048)
Proceeds from sale and maturity of investments	97,620	190,907
Net cash used in investing activities	(93,471)	(17,478)
CASH FLOWS FROM FINANCING ACTIVITIES:		
Proceeds from issuance of common stock	1,187	971
Payment of withholding taxes related to stock-based compensation to employees	(7,329)	(7,429)
Cash dividends paid	(38,685)	(33,422)
Net cash used in financing activities	(44,827)	(39,880)
INCREASE IN CASH AND CASH EQUIVALENTS	871	40
CASH AND CASH EQUIVALENTS, BEGINNING OF PERIOD	91,985	93,430
CASH AND CASH EQUIVALENTS, END OF PERIOD	$ 92,856	$ 93,470
SUPPLEMENTAL DISCLOSURES:		
Unrealized (loss) gain on available-for-sale securities	$ (2,976)	$ 1,848
Common stock issued to Board of Directors and Scientific Advisory Board that was earned and accrued for in a previous period	300	300
Net change in accounts payable and accrued expenses related to purchases of property and equipment	(7,082)	(54)
Cash paid for income taxes, net of refunds	47,263	59,849

The accompanying notes are an integral part of these Consolidated Financial Statements.

UNIVERSAL DISPLAY CORPORATION AND SUBSIDIARIES

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

(UNAUDITED)

1. BUSINESS:

Universal Display Corporation and its subsidiaries (the Company) is a leader in the research, development and commercialization of organic light emitting diode (OLED) technologies and materials for use in display and solid-state lighting applications. OLEDs are thin, lightweight and power-efficient solid-state devices that emit light and can be manufactured on both flexible and rigid substrates, making them highly suitable for use in full-color displays and as lighting products. OLED displays are capturing a growing share of the display market, especially in the mobile phone, television, monitor, wearable, tablet, notebook and personal computer, augmented reality (AR), virtual reality (VR) and automotive markets. The Company believes this is because OLEDs offer potential advantages over competing display technologies with respect to power efficiency, contrast ratio, viewing angle, video response time, form factor and manufacturing cost. The Company also believes that OLED lighting products have the potential to replace many existing light sources in the future because of their high-power efficiency, excellent color rendering index, low operating temperature and novel form factor. The Company's technology leadership, intellectual property position, and more than 20 years of experience working closely with leading OLED display manufacturers are some of the competitive advantages that should enable the Company to continue to share in the revenues from OLED displays and lighting products as they gain wider acceptance.

The Company's primary business strategy is to (1) develop new OLED materials and sell existing and new materials to product manufacturers of products for display applications, such as mobile phones, televisions, monitors, wearables, tablets, portable media devices, notebook computers, personal computers and automotive applications, and specialty and general lighting products; and (2) further develop and either license or otherwise commercialize the Company's proprietary OLED material, device design and manufacturing technologies to those manufacturers. The Company has established a significant portfolio of proprietary OLED technologies and materials, primarily through internal research and development efforts and acquisitions of patents and patent applications, as well as maintaining long-standing, and establishing new relationships with world-class universities, research institutions and strategic manufacturing partnerships. The Company currently owns, exclusively licenses or has the sole right to sublicense more than 6,000 patents issued and pending worldwide.

The Company manufactures and sells its proprietary OLED materials to customers for evaluation and use in commercial OLED products. The Company also enters into agreements with manufacturers of OLED display and lighting products under which it grants them licenses to practice under the Company's patents and to use the Company's proprietary know-how. At the same time, the Company works with these and other companies that are evaluating the Company's OLED material, device design and manufacturing technologies for possible use in commercial OLED display and lighting products.

2. SUMMARY OF SIGNIFICANT ACCOUNTING POLICIES:

Interim Financial Information

In the opinion of management, the accompanying unaudited Consolidated Financial Statements have been prepared in accordance with the requirements of the Securities and Exchange Commission for interim financial reporting and contain all adjustments (consisting of only normal recurring adjustments) necessary to present fairly the Company's financial position as of June 30, 2024 and results of operations for the three and six months ended June 30, 2024 and 2023, and cash flows for the six months ended June 30, 2024 and 2023. While management believes that the disclosures presented are adequate to make the information not misleading, these unaudited Consolidated Financial Statements should be read in conjunction with the audited Consolidated Financial Statements and the notes thereto in the Company's latest year-end Consolidated Financial Statements, which are included in the Company's Annual Report on Form 10-K for the year ended December 31, 2023. The results of the Company's operations for any interim period are not necessarily indicative of the results of operations for any other interim period or for the full year.

Principles of Consolidation

The Consolidated Financial Statements include the accounts of Universal Display Corporation and its wholly owned subsidiaries, UDC, Inc., UDC Ireland Limited (UDC Ireland), Universal Display Corporation Hong Kong, Limited, Universal Display Corporation Korea, Y.H. (UDC Korea), Universal Display Corporation Japan GK, Universal Display Corporation China, Ltd., Adesis, Inc. (Adesis), UDC Ventures LLC, OVJP Corporation (OVJP Corp) and OLED Material Manufacturing Limited (OMM). All intercompany transactions and accounts have been eliminated.

Reclassification of Prior Year Presentation

Certain prior year adjustments to reconcile net income to net cash provided by operating activities have been reclassified on the Consolidated Statements of Cash Flows to conform to the current year presentation. Stock-based compensation activity has been consolidated and includes stock-based compensation to employees, Board of Directors, and Scientific Advisory Board.

Certain prior year adjustments have been reclassified on the Consolidated Statements of Shareholders' Equity to conform to the current year presentation. Stock-based compensation and ESPP activity, net of taxes withheld has been consolidated and includes issuance of common stock to employees, shares withheld for employee taxes, issuance of common stock to Board of Directors and Scientific Advisory Board, cancellation of restricted stock units and issuance of common stock to employees under an ESPP.

Management's Use of Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles (GAAP) requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of revenues and expenses during the reporting period. The estimates made are principally in the areas of revenue recognition including estimates of material unit sales and royalties, the useful life of acquired intangibles, lease liabilities, right-of-use assets, the use and recoverability of inventories, intangibles, investments and income taxes including realization of deferred tax assets, stock-based compensation and retirement benefit plan liabilities. Actual results could differ from those estimates.

Inventories

Inventories consist of raw materials, work-in-process and finished goods, and are stated at the lower of cost, determined on a first-in, first-out basis, or net realizable value. Inventory valuation and firm committed purchase order assessments are performed on a quarterly basis and those items that are identified to be obsolete or in excess of forecasted usage are written down to their estimated realizable value. Estimates of realizable value are based upon management's analyses and assumptions, including, but not limited to, forecasted sales levels by product, expected product lifecycle, product development plans and future demand requirements. A 12-month rolling forecast based on factors, including, but not limited to, production cycles, anticipated product orders, marketing forecasts, backlog, and shipment activities is used in the inventory analysis. If market conditions are less favorable than forecasts or actual demand from customers is lower than estimates, additional inventory write-downs may be required. If demand is higher than expected, inventories that had previously been written down may be sold.

Fair Value of Financial Instruments

The carrying values of accounts receivable, other current assets, accounts payable and other current liabilities approximate fair value in the accompanying Consolidated Financial Statements due to the short-term nature of those instruments. The Company's other financial instruments, which include cash equivalents and investments (excluding minority equity investments) are carried at fair value.

Minority Equity Investments

The Company accounts for minority equity investments in companies that are not accounted for under the equity method as equity securities without readily determinable fair values. The value of these securities is based on original cost less impairments, if any, plus or minus changes resulting from observable price changes in orderly transactions for the identical or similar investment in the same issuer. Under this method, the share of income or loss of such companies is not included in the Consolidated Statements of Income. The carrying value of these investments is included in investments on the Consolidated Balance Sheets.

The Company's policy is to recognize an impairment in the value of its minority equity investments when evidence of an impairment exists. Factors considered in the assessment include a significant adverse change in the regulatory, economic, or technological environment, the completion of new equity financing that may indicate a decrease in value, the failure to complete new equity financing arrangements after seeking to raise additional funds, or the commencement of proceedings under which the assets of the business may be placed in receivership or liquidated to satisfy the claims of debt and equity stakeholders. The impairment in the value of minority equity investments is included in the other loss, net line item on the Consolidated Statements of Income.

Leases

The Company is a lessee in operating leases primarily incurred to facilitate manufacturing, research and development, and selling, general and administrative activities. At contract inception, the Company determines if an arrangement is or contains a lease, and if so recognizes a right-of-use asset and lease liability at the lease commencement date. For operating leases, the lease liability is measured at the present value of the unpaid lease payments at the lease commencement date, whereas for finance leases, the lease liability is

initially measured at the present value of the unpaid lease payments and subsequently measured at amortized cost using the interest method. Operating lease right-of-use assets are included in other assets on the Consolidated Balance Sheets. The short-term portion of operating lease liabilities is included in other current liabilities on the Consolidated Balance Sheets and the long-term portion is included in other liabilities on the Consolidated Balance Sheets. As of June 30, 2024, the Company had no leases that qualified as financing arrangements.

Key estimates and judgments include how the Company determines the discount rate used to discount the unpaid lease payments to present value and the lease term. The Company monitors for events or changes in circumstances that could potentially require recognizing an impairment loss.

Revenue Recognition and Deferred Revenue

Material sales relate to the Company's sale of its OLED materials for incorporation into its customers' commercial OLED products or for their OLED development and evaluation activities. Revenue associated with material sales is generally recognized at the time title passes, which is typically at the time of shipment or at the time of delivery, depending upon the contractual agreement between the parties. Revenue may be recognized after control of the material passes in the event the transaction price includes variable consideration. For example, a customer may be provided an extended opportunity to stock materials prior to use in mass production and given a general right of return not conditioned on breaches of warranties associated with the specific product. In such circumstances, revenue will be recognized at the earlier of the expiration of the customer's general right of return or once it becomes unlikely that the customer will exercise its right of return.

The vast majority of revenue attributed to material sales is determined through technology license agreements and material supply agreements the terms of which are jointly agreed upon with the Company's customers. The remaining revenue recognized is in the form of contract research services revenue earned by the Company's subsidiary, Adesis, Inc., and the Company's occasional material sales to smaller customers. None of the revenue recognized during the three and six months ended June 30, 2024 and 2023 resulted solely from royalty or license fee arrangements as to which there were not associated material sales.

The rights and benefits to the Company's OLED technologies are conveyed to the customer through technology license agreements and material supply agreements. The Company believes that the licenses and materials sold under these combined agreements are not distinct from each other for financial reporting purposes and as such, they are accounted for as a single performance obligation. Accordingly, total contract consideration is estimated and recognized over the contract term based on material units sold at the estimated per unit fee over the life of the contract. Total contract consideration is allocated to material sales and royalty and licensing fees on the Consolidated Statements of Income based on contract pricing.

Various estimates are relied upon to recognize revenue. The Company estimates total material units to be purchased by its customers over the contract term based on historical trends, industry estimates and its forecast process. Management uses the expected value method to estimate the material per unit fee. Additionally, management estimates the sales-based portion of royalty revenue based on the estimated net sales revenue of its customers over the contract term.

Contract research services revenue is revenue earned by Adesis by providing chemical materials synthesis research, development and commercialization for non-OLED applications on a contractual basis. These services range from intermediates for structure-activity relationship studies, reference agents and building blocks for combinatorial synthesis, re-synthesis of key intermediates, specialty organic chemistry needs, and selective toll manufacturing. These services are provided to third-party pharmaceutical and life sciences firms and other technology firms at fixed costs or predetermined rates on a contract basis. Revenue is recognized as services are performed with billing schedules and payment terms negotiated on a contract-by-contract basis. Payments received in excess of revenue recognized are recorded as deferred revenue. In other cases, services may be provided and revenue is recognized before the customer is invoiced. In these cases, revenue recognized will exceed amounts billed and the difference, representing amounts which are currently unbillable to the customer pursuant to contractual terms, is recorded as an unbilled receivable.

Technology development and support revenue is revenue earned from development and technology evaluation agreements and commercialization assistance fees. Technology development and support revenue is included in contract research services on the Consolidated Statements of Income.

On December 2, 2022, the Company entered into a commercial patent license agreement with Samsung Display Co., Ltd. (SDC), replacing a previous license agreement that had been in place since 2018. This agreement, which covers the manufacture and sale of specified OLED display materials, was effective as of January 1, 2023 and lasts through the end of 2027 with an additional two-year extension option for SDC. Under this agreement, the Company is being paid a license fee, which includes quarterly and annual payments over the agreement term of five years. The agreement conveys to SDC the non-exclusive right to use certain of the Company's intellectual property assets for a limited period of time that is less than the estimated life of the assets.

At the same time the Company entered into the current commercial license agreement with SDC, the Company also entered into a new supplemental material purchase agreement with SDC, which lasts for the same term as the license agreement and is subject to the same extension option. This new material purchase agreement replaced a previous purchase agreement that had been in place since 2018. Under the supplemental material purchase agreement, SDC agrees to purchase red and green phosphorescent emitter materials from the Company for use in the manufacture of licensed products. This amount purchased is subject to SDC's requirements for phosphorescent emitter materials and the Company's ability to meet these requirements over the term of the supplemental agreement.

In 2015, the Company entered into an OLED patent license agreement and an OLED commercial supply agreement with LG Display Co., Ltd. (LG Display), which were effective as of January 1, 2015. The terms of these agreements were extended by a January 1, 2021 amendment through the end of 2025. The patent license agreement provides LG Display a non-exclusive, royalty bearing portfolio license to make and sell OLED displays under the Company's patent portfolio. The patent license calls for license fees, prepaid royalties and running royalties on licensed products. The OLED commercial supply agreement provides for the sale of materials for use by LG Display, which may include phosphorescent emitters and host materials. The agreements provide for certain other minimum obligations relating to the volume of material sales anticipated over the lives of the agreements as well as minimum royalty revenue.

In 2023, the Company entered into new long-term, multi-year agreements with BOE Technology Group Co., Ltd. (BOE). Under these agreements, the Company has granted BOE non-exclusive license rights under various patents owned or controlled by the Company to manufacture and sell OLED display products. The Company supplies phosphorescent OLED materials to BOE for use in its licensed products.

In 2019, the Company entered into an evaluation and commercial supply relationship with Wuhan China Star Optoelectronics Semiconductor Display Technology Co., Ltd. (CSOT). In 2020, the Company entered into long-term, multi-year agreements with CSOT. Under these agreements, the Company has granted CSOT non-exclusive license rights under various patents owned or controlled by the Company to manufacture and sell OLED display products. The Company also supplies phosphorescent OLED materials to CSOT for use in its licensed products.

In 2024, the Company entered into new long-term, multi-year agreements with Visionox Technology, Inc. (Visionox). Under these agreements, the Company has granted Visionox non-exclusive license rights under various patents owned or controlled by the Company to manufacture and sell OLED display products. Additionally, the Company supplies phosphorescent OLED materials to Visionox for use in its licensed products.

In 2016, the Company entered into long-term, multi-year OLED patent license and material purchase agreements with Tianma Micro-electronics Co., Ltd. (Tianma). Under the license agreement, the Company has granted Tianma non-exclusive license rights under various patents owned or controlled by the Company to manufacture and sell OLED display products. The license agreement calls for license fees and running royalties on licensed products. Additionally, the Company supplies phosphorescent OLED materials to Tianma for use in its licensed products. In 2021, the parties extended the terms of both the patent license and material purchase agreements for an additional multi-year-term.

All material sales transactions that are not variable consideration transactions are billed and due within 90 days and substantially all are transacted in U.S. dollars.

Cost of Sales

Cost of sales consists of labor and material costs associated with the production of materials processed at the facilities of the Company's manufacturing partner, PPG Industries, Inc. (PPG) and at the Company's internal facilities. The Company's portion of cost of sales also includes depreciation of manufacturing equipment, as well as manufacturing overhead costs and inventory adjustments for excess and obsolete inventory.

Research and Development

Expenditures for research and development are charged to expense as incurred.

Patent Costs

Costs associated with patent applications, patent prosecution, patent defense and the maintenance of patents are charged to expense as incurred. Costs to successfully defend a challenge to a patent are capitalized to the extent of an evident increase in the value of the patent. Costs that relate to an unsuccessful outcome are charged to expense.

Amortization of Acquired Technology

Amortization costs primarily relate to technology acquired from Merck KGaA, Darmstadt, Germany (Merck KGaA) and BASF SE (BASF). The Merck KGaA acquisition was completed on April 28, 2023 and the BASF acquisition was completed during the year ended December 31, 2016. Acquisition costs are being amortized over a period of 10 years for the Merck KGaA and BASF patents.

Amortization of Other Intangible Assets

Other intangible assets from the Adesis acquisition are being amortized over a period of 10 to 15 years. See Note 7 for further discussion.

Translation of Foreign Currency Financial Statements and Foreign Currency Transactions

The Company's reporting currency is the U.S. dollar. The functional currency for the UDC Ireland and UDC Korea subsidiaries are also the U.S. dollar and the functional currency for the OMM subsidiary and each of the Company's other Asia-Pacific foreign subsidiaries is its respective local currency. The Company translates the amounts included in the Consolidated Statements of Income from OMM and its Asia-Pacific foreign subsidiaries into U.S. dollars at weighted-average exchange rates, which the Company believes are representative of the actual exchange rates on the dates of the transactions. The Company's OMM subsidiary and each of the Company's other Asia-Pacific foreign subsidiaries' assets and liabilities are translated into U.S. dollars from the local currency at the actual exchange rates as of the end of each reporting date, and the Company records the resulting foreign exchange translation adjustments in the Consolidated Balance Sheets as a component of accumulated other comprehensive loss. The overall effect of the translation of foreign currency and foreign currency transactions to date has been insignificant.

Income Taxes

Income taxes are accounted for under the asset and liability method. Deferred 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 tax bases and operating loss and tax credit carryforwards. Deferred tax assets and liabilities are measured using enacted tax rates expected to apply to taxable income in the years in which those temporary differences are expected to be recovered or settled. The effect on deferred tax assets and liabilities of a change in tax rates is recognized in income in the period that includes the enactment date. The Company recognizes the effect of income tax positions only if those positions are more likely than not of being sustained. Recognized income tax positions are measured at the largest amount of which the likelihood of realization is greater than 50%. Changes in recognition or measurement are reflected in the period in which the change in judgment occurs. The Company records interest and penalties, if any, related to unrecognized tax benefits as a component of tax expense.

Share-Based Payment Awards

The Company recognizes in the Consolidated Statements of Income the grant-date fair value of equity-based awards such as shares issued under employee stock purchase plans, restricted stock awards, restricted stock units and performance unit awards issued to employees and directors.

The grant-date fair value of stock awards is based on the closing price of the stock on the date of grant. The fair value of share-based awards is recognized as compensation expense on a straight-line basis over the requisite service period, net of forfeitures. The Company issues new shares upon the respective grant, exercise or vesting of the share-based payment awards, as applicable.

Performance unit awards are subject to either a performance-based or market-based vesting requirement. For performance-based vesting, the grant-date fair value of the award, based on fair value of the Company's common stock, is recognized over the service period based on an assessment of the likelihood that the applicable performance goals will be achieved, and compensation expense is periodically adjusted based on actual and expected performance. Compensation expense for performance unit awards with market-based vesting is calculated based on the estimated fair value as of the grant date utilizing a Monte Carlo simulation model and is recognized over the service period on a straight-line basis.

Recent Accounting Pronouncements

Adoption of New Accounting Standards

In June 2022, the FASB issued ASU No. 2022-03, *Fair Value Measurement (Topic 820): Fair Value Measurement of Equity Securities Subject to Contractual Sale Restrictions*. Under this standard, a contractual restriction on the sale of an equity security is not considered in measuring the security's fair value. The standard also requires certain disclosures for equity securities that are subject to

contractual restrictions. The adoption of ASU 2022-03, beginning on January 1, 2024, did not have an impact on the Consolidated Financial Statements and related disclosures.

Accounting Standards Issued But Not Yet Adopted

In November 2023, the FASB issued ASU No. 2023-07, *Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures*. The standard improves the reportable segment disclosure requirements, primarily through enhanced disclosures about significant segment expenses. ASU 2023-07 becomes effective during the annual period ending December 31, 2024. The Company is evaluating the potential impact of this standard on its Consolidated Financial Statements and related disclosures.

In December 2023, the FASB issued ASU No. 2023-09, *Improvements to Income Tax Disclosures (Topic 740)*. The standard enhances to the annual income tax disclosures to address investor requests for more information about the tax risks and opportunities present in an entity's worldwide operations. ASU 2023-09 becomes effective for annual periods beginning after December 15, 2024, and the Company is evaluating the potential impact of this standard on its income tax disclosures.

In March 2024, the FASB issued ASU No. 2024-01, *Compensation - Stock Compensation (Topic 718)*. The standard provides guidance to reduce complexity and diversity in practice in determining whether a profits interest award is accounted for as a share-based payment. Early adoption is permitted. This guidance can be applied either retrospectively to all prior periods presented in the financial statements or prospectively to profits interest or similar awards granted or modified on or after the effective date for our application of this guidance. ASU 2024-01 becomes effective January 1, 2025, and the Company is evaluating the potential impact of this standard on its Consolidated Financial Statements and related disclosures.

3. CASH, CASH EQUIVALENTS AND INVESTMENTS:

The Company's portfolio of marketable fixed income securities consists of U.S. Government bonds and corporate bonds. The Company considers all highly liquid debt instruments purchased with an original maturity (maturity at the purchase date) of three months or less to be cash equivalents. The Company classifies its remaining debt security investments as available-for-sale. These debt securities are carried at fair market value, with unrealized gains and losses reported in shareholders' equity. Gains or losses on securities sold are based on the specific identification method.

Cash and Cash Equivalents

The following table provides details regarding the Company's portfolio of cash and cash equivalents (in thousands):

Cash and Cash Equivalents Classification	Cost or Amortized Cost	Unrealized Gains	Unrealized (Losses)	Aggregate Fair Market Value
June 30, 2024				
Cash accounts in banking institutions	$ 66,079	$ —	$ —	$ 66,079
Money market accounts	26,777	—	—	26,777
	$ 92,856	$ —	$ —	$ 92,856
December 31, 2023				
Cash accounts in banking institutions	$ 91,717	$ —	$ —	$ 91,717
Money market accounts	268	—	—	268
	$ 91,985	$ —	$ —	$ 91,985

Short-term Investments

The following table provides details regarding the Company's portfolio of short-term investments (in thousands):

Short-term Investments Classification	Cost or Amortized Cost	Unrealized Gains	Unrealized (Losses)	Aggregate Fair Market Value
June 30, 2024				
Corporate bonds	$ 148	$ —	$ —	$ 148
U.S. Government bonds	438,274	18	(878)	437,414
Marketable securities [1]	102	—	—	105
	$ 438,524	$ 18	$ (878)	$ 437,667
December 31, 2023				
Corporate bonds	$ 1,763	$ 1	$ (5)	$ 1,759
U.S. Government bonds	420,769	303	(694)	420,378
	$ 422,532	$ 304	$ (699)	$ 422,137

(1)Changes in aggregate fair market value recorded in other loss, net on the Consolidated Statements of Income.

Long-term U.S. Government Bond Investments

The following table provides details regarding the Company's portfolio of long-term investments (in thousands):

Long-term Investments Classification	Cost or Amortized Cost	Unrealized Gains	Unrealized (Losses)	Aggregate Fair Market Value
June 30, 2024				
U.S. Government bonds	$ 349,476	$ 120	$ (1,183)	$ 348,413
	$ 349,476	$ 120	$ (1,183)	$ 348,413
December 31, 2023				
U.S. Government bonds	$ 284,053	$ 1,457	$ (8)	$ 285,502
	$ 284,053	$ 1,457	$ (8)	$ 285,502

Minority Equity Investments

The Company's portfolio of minority equity investments consists of investments in privately held early-stage companies primarily motivated for the Company to gain early access to new technology and are passive in nature in that the Company typically does not seek to obtain representation on the boards of directors of the companies in which it invests. Minority equity investments are included in investments on the Consolidated Balance Sheets. As of June 30, 2024 and December 31, 2023, the Company had minority equity investments in five entities with a total carrying value of $14.0 million accounted for as equity securities without readily determinable fair values.

4. FAIR VALUE MEASUREMENTS:

The following table provides the assets and liabilities carried at fair value measured on a recurring basis as of June 30, 2024 (in thousands):

		Fair Value Measurements, Using		
	Total Carrying Value as of June 30, 2024	Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Short-term U.S. Government bonds	$ 437,414	$ 437,414	$ —	$ —
Long-term U.S. Government bonds	348,413	348,413	—	—
Cash equivalents	26,777	26,777	—	—
Short-term Corporate bonds	148	148	—	—
Short-term Marketable securities	105	105	—	—

The following table provides the assets and liabilities carried at fair value measured on a recurring basis as of December 31, 2023 (in thousands):

	Total Carrying Value as of December 31, 2023	Fair Value Measurements, Using Quoted Prices in Active Markets (Level 1)	Significant Other Observable Inputs (Level 2)	Significant Unobservable Inputs (Level 3)
Short-term U.S. Government bonds	$ 420,378	$ 420,378	$ —	$ —
Long-term U.S. Government bonds	285,502	285,502	—	—
Short-term Corporate bonds	1,759	1,759	—	—
Cash equivalents	268	268	—	—

Level 1 inputs are quoted prices (unadjusted) in active markets for identical assets or liabilities. Level 2 inputs are quoted prices for similar assets and liabilities in active markets or inputs that are observable for the asset or liability, either directly or indirectly through market corroboration, for substantially the full term of the financial instrument. Level 3 inputs are unobservable inputs based on management's own assumptions used to measure assets and liabilities at fair value. A financial asset's or liability's classification is determined based on the lowest level input that is significant to the fair value measurement.

Changes in fair value of the debt investments are recorded as unrealized gains and losses in accumulated other comprehensive loss on the Consolidated Balance Sheets and any credit losses on debt investments are recorded as an allowance for credit losses with an offset recognized in other loss, net on the Consolidated Statements of Income. There were no credit losses on debt investments as of June 30, 2024 or December 31, 2023.

5. INVENTORY:

Inventory consisted of the following (in thousands):

	June 30, 2024	December 31, 2023
Raw materials	$ 107,143	$ 113,400
Work-in-process	20,204	9,433
Finished goods	44,496	52,962
Inventory	$ 171,843	$ 175,795

The Company recorded an increase in its inventory reserves of $289,000 and $781,000 for the three months ended June 30, 2024 and 2023, respectively, and $289,000 and $4.1 million for the six months ended June 30, 2024 and 2023, respectively, due to excess inventory levels in certain products.

6. PROPERTY AND EQUIPMENT:

Property and equipment, net consist of the following (in thousands):

	June 30, 2024	December 31, 2023
Land	$ 12,230	$ 12,230
Building and improvements	117,282	116,903
Office and lab equipment	150,031	148,465
Furniture, fixtures and computer related assets	18,375	18,970
Construction-in-progress	41,079	22,490
	338,997	319,058
Less: Accumulated depreciation	(153,523)	(143,908)
Property and equipment, net	$ 185,474	$ 175,150

Depreciation expense was $6.5 million and $6.7 million for the three months ended June 30, 2024 and 2023, respectively, and $13.1 million and $13.2 million for the six months ended June 30, 2024 and 2023, respectively.

7. GOODWILL AND INTANGIBLE ASSETS:

The Company monitors the recoverability of goodwill annually or whenever events or changes in circumstances indicate the carrying value may not be recoverable. Purchased intangible assets subject to amortization consist of acquired technology and other intangible assets that include trade names, customer relationships and developed intellectual property (IP) processes.

Acquired Technology

Acquired technology primarily consists of acquired license rights for patents and know-how obtained from Merck KGaA, BASF and Fujifilm. These intangible assets consist of the following (in thousands):

	June 30, 2024	December 31, 2023
Merck KGaA	$ 66,012	$ 66,012
BASF	95,989	95,989
Fujifilm	109,462	109,462
Other	5,712	5,712
	277,175	277,175
Less: Accumulated amortization	(195,235)	(186,850)
Acquired technology, net	$ 81,940	$ 90,325

Amortization expense related to acquired technology was $4.2 million and $3.6 million for the three months ended June 30, 2024 and 2023, respectively and $8.4 million and $6.2 million for the six months ended June 30, 2024 and 2023, respectively. Amortization expense is included in the amortization of acquired technology and other intangible assets expense line item on the Consolidated Statements of Income and is expected to be $8.4 million for the six months ending December 31, 2024, $16.8 million in the year ending December 31, 2025, $12.0 million in the year ending December 31, 2026, $7.2 million in each of the years ending December 31, 2027 and 2028, and $30.3 million thereafter.

Merck KGaA Patent Acquisition

In April 2023, UDC Ireland entered into a Patent Sale and License Agreement with Merck KGaA. Under this agreement, Merck KGaA sold to UDC Ireland all of its rights, title and interest to over 550 of its owned and licensed OLED-related patents and patent applications in exchange for a cash payment of $66.0 million. The Patent Sale and License Agreement contains customary representations, warranties and covenants of the parties. UDC Ireland recorded the payment of $66.0 million as acquired technology, which is being amortized over a period of 10 years.

BASF Patent Acquisition

On June 28, 2016, UDC Ireland entered into and consummated an IP Transfer Agreement with BASF. Under the IP Transfer Agreement, BASF sold to UDC Ireland all of its rights, title and interest to certain of its owned and co-owned intellectual property rights relating to the composition, development, manufacture and use of OLED materials, including OLED lighting and display stack technology, as well as certain tangible assets. The intellectual property includes know-how and more than 500 issued and pending patents in the area of phosphorescent materials and technologies. These assets were acquired in exchange for a cash payment of €86.8 million ($95.8 million). In addition, UDC Ireland also took on certain rights and obligations under three joint research and development agreements to which BASF was a party. The IP Transfer Agreement also contains customary representations, warranties and covenants of the parties. UDC Ireland recorded the payment of €86.8 million ($95.8 million) and acquisition costs incurred of $217,000 as acquired technology, which is being amortized over a period of 10 years.

Other Intangible Assets

As a result of the Adesis acquisition in June 2016, the Company recorded $16.8 million of other intangible assets, including $10.5 million assigned to customer relationships with a weighted average life of 11.5 years, $4.8 million to internally developed IP, processes and recipes with a weighted average life of 15 years, and $1.5 million to trade name and trademarks with a weighted average life of 10 years.

At June 30, 2024, these other intangible assets consist of the following (in thousands):

	June 30, 2024		
	Gross Carrying Amount	Accumulated Amortization	Net Carrying Amount
Customer relationships	$ 10,520	$ (7,257)	$ 3,263
Developed IP, processes and recipes	4,820	(2,548)	2,272
Trade name/Trademarks	1,500	(1,193)	307
Other	448	(127)	321
Total identifiable other intangible assets	$ 17,288	$ (11,125)	$ 6,163

Amortization expense related to other intangible assets was $355,000 for both three months ended June 30, 2024 and 2023, and $711,000 and $707,000 for the six months ended June 30, 2024 and 2023, respectively. Amortization expense is included in the amortization of acquired technology and other intangible assets expense line item on the Consolidated Statements of Income and is expected to be $717,000 for the six months ending December 31, 2024, $1.4 million for each of the years ending December 31, 2025 and 2026, $1.3 million for the year ending December 31, 2027, $422,000 for the year ending December 31, 2028, and $1.0 million in total thereafter.

8. OTHER ASSETS:

Other assets consist of the following (in thousands):

	June 30, 2024	December 31, 2023
Long-term taxes receivable	$ 56,407	$ 60,146
Right-of-use assets	23,091	24,910
Long-term unbilled receivables	9,774	9,074
Long-term contract assets	8,040	9,278
Other long-term assets	1,533	1,881
Other assets	$ 98,845	$ 105,289

See Notes 9 and 20 for further explanation on right-of-use assets and non-current taxes receivable, respectively.

9. LEASES:

The Company has entered into operating leases to facilitate the expansion of its manufacturing, research and development, and selling, general and administrative activities. For purposes of calculating operating lease liabilities, lease terms may be deemed to include options to extend or terminate the lease when those events are reasonably certain to occur. The interest rate implicit in lease contracts is typically not readily determinable and as such the Company uses the appropriate incremental borrowing rate based on information available at the lease commencement date in determining the present value of the lease payments. Current lease agreements do not contain any residual value guarantees or material restrictive covenants. As of June 30, 2024, the Company did not have any finance leases and no additional operating leases that have not yet commenced.

The following table presents the Company's operating lease cost and supplemental cash flow information related to the Company's operating leases (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
Operating lease cost	$ 1,089	$ 1,223	$ 2,192	$ 2,444
Non-cash activity:				
Right-of-use assets obtained in exchange for lease obligations	$ —	$ —	$ —	$ —

The following table presents the Company's operating lease right-of-use assets and liabilities (in thousands):

	June 30, 2024	December 31, 2023
Right-of-use assets	$ 23,091	$ 24,910
Short-term lease liabilities	3,635	3,533
Long-term lease liabilities	21,020	22,855

The following table presents weighted average assumptions used to compute the Company's right-of-use assets and lease liabilities:

	June 30, 2024
Weighted average remaining lease term (in years)	6.3
Weighted average discount rate	3.7%

As of June 30, 2024, current operating leases had remaining terms between two and seven years with options to extend the lease terms.

Undiscounted future minimum lease payments as of June 30, 2024, by year and in the aggregate, having non-cancelable lease terms in excess of one year were as follows (in thousands):

	Maturities of Operating Lease Liabilities
2024 [1]	$ 2,142
2025	4,312
2026	4,392
2027	4,314
2028	4,024
Thereafter	8,052
Total lease payments	27,236
Less: Imputed interest	(2,581)
Present value of lease payments	$ 24,655

(1)Scheduled maturities of lease liabilities represent the period from July 1, 2024 to December 31, 2024.

10. ACCRUED EXPENSES:

Accrued expenses consist of the following (in thousands):

	June 30, 2024	December 31, 2023
Compensation	$ 21,329	$ 29,456
PPG Industries, Inc. agreement	20,261	11,962
Consulting	2,156	2,121
Professional fees	967	1,124
Research and development agreements	808	822
Royalties	774	647
Other	12,329	5,948
Accrued expenses	$ 58,624	$ 52,080

11. RESEARCH AND LICENSE AGREEMENTS WITH ACADEMIC PARTNERS:

The Company has long-standing relationships with a number of academic institutions that undertake funded research projects, including Princeton University (Princeton) and the University of Southern California (USC).

Under the current license agreement among the Company, Princeton and USC, the universities have granted the Company worldwide, exclusive license rights, with rights to sublicense, to make, have made, use, lease and/or sell products and to practice processes based on patent applications and issued patents arising out of research performed by the universities for the Company. The Company recorded royalty expense in connection with this agreement of $107,000 and $139,000 for the three months ended June 30, 2024 and 2023, respectively, and $1.7 million and $298,000 for the six months ended June 30, 2024 and 2023, respectively.

The Company also makes payments under the current research agreement with USC on a quarterly basis as actual expenses are incurred. As of June 30, 2024, the Company was obligated to pay USC up to $2.5 million for work to be performed during the remaining term. The Company recorded research and development expense in connection with work performed under the agreement of $444,000 and $133,000 for the three months ended June 30, 2024 and 2023, respectively, and $711,000 and $416,000 for the six months ended June 30, 2024 and 2023, respectively.

12. OTHER LIABILITIES:

Other liabilities consist of the following (in thousands):

	June 30, 2024	December 31, 2023
Long-term lease liabilities	$ 21,020	$ 22,855
Long-term taxes payable	15,749	15,749
Other long-term liabilities	353	54
Other liabilities	$ 37,122	$ 38,658

See Notes 9 and 20 for further explanation on long-term lease liabilities and long-term taxes payable, respectively.

13. EQUITY AND CASH COMPENSATION UNDER THE PPG AGREEMENT:

On September 22, 2011, the Company entered into an Amended and Restated OLED Materials Supply and Service Agreement with PPG (the New OLED Materials Agreement), which, effective as of October 1, 2011, replaced the original OLED Materials Agreement with PPG. The term of the New OLED Materials Agreement, by amendment in February 2021, runs through December 31, 2024, and thereafter is automatically renewed for additional one-year terms, unless terminated by the Company by providing prior notice of one year or terminated by PPG by providing prior notice of two years. The New OLED Materials Agreement contains provisions that are substantially similar to those of the original OLED Materials Agreement. Under the New OLED Materials Agreement, PPG continues to assist the Company in developing its proprietary OLED materials and supplying the Company with those materials for evaluation purposes and for resale to its customers.

Under the New OLED Materials Agreement, the Company compensates PPG on a cost-plus basis for the services provided during each calendar quarter. The Company is required to pay for some of these services in all cash. Up to 50% of the remaining services are payable, at the Company's sole discretion, in cash or shares of the Company's common stock, with the balance payable in cash. The actual number of shares of common stock issuable to PPG is determined based on the average closing price for the Company's common stock during a specified number of days prior to the end of each calendar half-year period ending on March 31 and September 30. If, however, this average closing price is less than $20.00, the Company is required to compensate PPG in cash. No shares have been issued for services rendered by PPG since the inception of the contract.

The Company is also required to reimburse PPG for raw materials used for research and development. The Company records the purchases of these raw materials as a current asset until such materials are used for research and development efforts.

In February 2021, the Company entered into an amendment to the New OLED Materials Agreement extending the term of the agreement and specifying operation and maintenance services to be provided by PPG affiliate, PPG SCM Ireland Limited (PPG SCM), to UDC Ireland, at the Company's manufacturing site in Shannon, Ireland that UDC Ireland's wholly-owned subsidiary, OLED Material Manufacturing Limited (OMM), began leasing at such time for the production of OLED materials. OMM purchased the site in September 2023 and the Company amended and restated the February 2021 amendment to reflect OMM's ownership and PPG SCM's updated operation and maintenance services after such purchase. Facility improvements have been completed and operations commenced in June 2022. As with the initial New OLED Materials Agreement, the Company compensates PPG on a cost-plus basis for the services provided at the Shannon manufacturing facility.

The Company recorded research and development expense of $3.4 million and $2.6 million for the three months ended June 30, 2024 and 2023, respectively, and $7.9 million and $4.6 million for the six months ended June 30, 2024 and 2023, respectively, in relation to the cash portion of the reimbursement of expenses and work performed by PPG, excluding amounts paid for commercial chemicals.

14. SHAREHOLDERS' EQUITY:

Preferred Stock

The Company's Amended and Restated Articles of Incorporation authorize it to issue up to 5,000,000 shares of $0.01 par value preferred stock with designations, rights and preferences determined from time-to-time by the Company's Board of Directors. Accordingly, the Company's Board of Directors is empowered, without shareholder approval, to issue preferred stock with dividend, liquidation, conversion, voting or other rights superior to those of shareholders of the Company's common stock.

In 1995, the Company issued 200,000 shares of Series A Nonconvertible Preferred Stock (Series A) to American Biomimetics Corporation (ABC) pursuant to a certain Technology Transfer Agreement between the Company and ABC. The Series A shares have a liquidation value of $7.50 per share. Series A shareholders, as a single class, have the right to elect two members of the Company's

Board of Directors. This right has never been exercised. Holders of the Series A shares are entitled to one vote per share on matters which shareholders are generally entitled to vote. The Series A shareholders are not entitled to any dividends.

As of June 30, 2024, the Company had issued 200,000 shares of preferred stock, all of which were outstanding.

Common Stock

The Company's Amended and Restated Articles of Incorporation authorize it to issue up to 200,000,000 shares of $0.01 par value common stock. Each share of the Company's common stock entitles the holder to one vote on all matters to be voted upon by the shareholders.

As of June 30, 2024, the Company had issued 48,814,273 shares of common stock, of which 47,448,625 were outstanding. During the three and six months ended June 30, 2024 and 2023, the Company repurchased no shares of common stock.

Dividends

During the three months ended June 30, 2024, the Company declared and paid cash dividends of $0.40 per common share, or $19.2 million, and during the six months ended June 30, 2024, the Company declared and paid cash dividends of $0.80 per common share, or $38.7 million, on the Company's outstanding common stock.

On July 30, 2024, the Company's Board of Directors declared a third quarter dividend of $0.40 per share to be paid on September 30, 2024 to all shareholders of record of the Company's common stock as of the close of business on September 16, 2024. All future dividends will be subject to the approval of the Company's Board of Directors.

15. ACCUMULATED OTHER COMPREHENSIVE LOSS:

Amounts related to the changes in accumulated other comprehensive loss were as follows (in thousands):

	Unrealized Gain (Loss) on Available-for-Sale Securities	Net Unrealized Gain (Loss) on Retirement Plan [2]	Change in Cumulative Foreign Currency Translation Adjustment	Total	Affected Line Items in the Consolidated Statements of Income
Balance December 31, 2023, net of tax	$ 858	$ (1,808)	$ (136)	$ (1,086)	
Other comprehensive loss before reclassification	(2,976)	(761)	(93)	(3,830)	
Reclassification to net income [1]	—	256	—	256	Selling, general and administrative, research and development and cost of sales
Change during period	(2,976)	(505)	(93)	(3,574)	
Balance June 30, 2024, net of tax	$ (2,118)	$ (2,313)	$ (229)	$ (4,660)	

	Unrealized Gain (Loss) on Available-for-Sale Securities	Net Unrealized Gain (Loss) on Retirement Plan [2]	Change in Cumulative Foreign Currency Translation Adjustment	Total	Affected Line Items in the Consolidated Statements of Income
Balance December 31, 2022, net of tax	$ (7,887)	$ (10,011)	$ (554)	$ (18,452)	
Other comprehensive gain before reclassification	1,568	—	66	1,634	
Reclassification to net income [1]	—	506	—	506	Selling, general and administrative, research and development and cost of sales
Change during period	1,568	506	66	2,140	
Balance June 30, 2023, net of tax	$ (6,319)	$ (9,505)	$ (488)	$ (16,312)	

(1)The Company reclassified amortization of prior service cost, actuarial loss and curtailment charge for its retirement plan from accumulated other comprehensive loss to net income of $256,000 and $506,000 for the six months ended June 30, 2024 and 2023, respectively.
(2)Refer to Note 17: Retirement Plan Benefit Liability.

16. STOCK-BASED COMPENSATION:

Equity Compensation Plan

On June 15, 2023, the shareholders of the Company voted to approve the Universal Display Corporation 2023 Equity Compensation Plan (the "Equity Compensation Plan"), which replaced the Universal Display Corporation 2014 Equity Compensation Plan. The Equity Compensation Plan provides for the granting of incentive and nonqualified stock options, shares of common stock, stock appreciation rights and performance units to employees, directors and consultants of the Company. Stock options are exercisable over periods determined by the Company's Human Capital Committee, but for no longer than 10 years from the grant date. The total number of shares that may be subject to awards under the Equity Compensation Plan is equal to the shares that were available for issuance and not subject to an award under the 2014 Equity Compensation Plan at the time it was replaced by the Equity Compensation Plan, subject to adjustment with respect to shares underlying any outstanding award granted under the Equity Compensation Plan or the 2014 Equity Compensation Plan that may expire, or be terminated, surrendered or forfeited for any reason, without issuance of such shares. As of June 30, 2024, there were 1,358,380 shares that remained available to be granted under the Equity Compensation Plan. The Equity Compensation Plan will terminate on June 15, 2033.

Restricted Stock Awards and Units

The Company has issued restricted stock awards and units to employees and non-employees with vesting terms of one to five years. The fair value is equal to the market price of the Company's common stock on the date of grant for awards granted to employees. Consistent with the accounting for equity-classified awards issued to employees, our equity-classified nonemployee share-based awards are measured at the grant date fair value. Expense for restricted stock awards and units is amortized ratably over the vesting period for the awards issued to employees and using a graded vesting method for the awards issued to non-employees.

During the six months ended June 30, 2024, the Company granted 86,035 shares of restricted stock awards and restricted stock units to employees and non-employees, which had a total fair value of $14.2 million on the respective dates of grant, and will vest over three to five years from the date of grant, provided that the grantee is still an employee of the Company or is still providing services to the Company on the applicable vesting date.

For the three months ended June 30, 2024 and 2023, the Company recorded, as compensation charges related to all restricted stock awards and units granted to employees and non-employees, selling, general and administrative expense of $2.1 million and $2.4 million, respectively, research and development expense of $1.4 million and $1.4 million, respectively, and cost of sales of $406,000 and $451,000, respectively. For the six months ended June 30, 2024 and 2023, the Company recorded, as compensation charges related to all restricted stock awards and units granted to employees and non-employees, selling, general and administrative expense of $4.3 million and $5.4 million, respectively, research and development expense of $2.8 million and $2.9 million, respectively, and cost of sales of $842,000 and $981,000, respectively.

In connection with the vesting of restricted stock awards and units during the three months ended June 30, 2024 and 2023, 1,753 and 1,611 shares, respectively, with aggregate fair values of $271,000 and $217,000, respectively, were withheld in satisfaction of tax withholding obligations and are reflected as a financing activity within the Consolidated Statements of Cash Flows. In connection with the vesting of restricted stock awards and units during the six months ended June 30, 2024 and 2023, 33,422 and 47,964 shares, respectively, with aggregate fair values of $5.9 million and $6.6 million, respectively, were withheld in satisfaction of tax withholding obligations and are reflected as a financing activity within the Consolidated Statements of Cash Flows.

For the three months ended June 30, 2024 and 2023, the Company recorded as compensation charges related to all restricted stock units granted to non-employee members of the Scientific Advisory Board, whose unvested shares are marked to market each reporting period, research and development expense of $60,000 for both three-month periods. Such compensation charges to research and development expense were $122,000 and $127,000, respectively, for the six months ended June 30, 2024 and 2023.

The Company has granted restricted stock units to non-employee members of the Board of Directors with quarterly vesting over a period of approximately one year. The fair value is equal to the market price of the Company's common stock on the date of grant. The restricted stock units are issued and expense is recognized ratably over the vesting period. For the three months ended June 30, 2024 and 2023, the Company recorded compensation charges for services performed, related to all restricted stock units granted to non-employee members of the Board of Directors, selling, general and administrative expense of $468,000 and $359,000, respectively. Such compensation charges to selling, general, and administrative expense were $864,000 and $714,000, respectively, for the six months ended June 30, 2024 and 2023. In connection with the vesting of the restricted stock, the Company issued to non-employee members of the Board of Directors 5,218 and 3,304 shares, respectively, during the six months ended June 30, 2024 and 2023.

Performance Unit Awards

Each performance unit award is subject to both a performance-vesting requirement (either performance-based or market-based) and a service-vesting requirement. The performance-based vesting requirement is tied to EBITDA and cash flow achievement, as measured over a specific performance period. The market-based vesting requirement is tied to the Company's total shareholder return (TSR) relative to the TSR of companies comprising the Nasdaq Electronics Components Index, as measured over a three-year performance period. The maximum number of performance units that may vest based on performance is three times the shares granted. Further, if the Company's performance falls below certain thresholds, the performance units will not vest at all.

During the six months ended June 30, 2024, the Company granted 69,600 performance units, of which 34,798 units are subject to performance-based vesting requirements based on three-year cumulative adjusted EBITDA, 17,401 units are subject to performance-based vesting requirements based on three-year cumulative gross margin and 17,401 units are subject to market-based, TSR vesting requirements. The grant date fair value of the performance unit awards granted was $11.4 million for the six months ended June 30, 2024, as determined by the Company’s common stock on date of grant for the units with performance-based vesting and a Monte Carlo simulation model used for the units with market-based vesting.

For the three months ended June 30, 2024 and 2023, the Company recorded selling, general and administrative expense of $2.9 million and $1.1 million, respectively, research and development expense of $1.2 million and $607,000, respectively, and cost of sales expense of $718,000 and $376,000, respectively, related to the performance units. For the six months ended June 30, 2024 and 2023, the Company recorded selling, general and administrative expense of $5.5 million and $251,000, respectively, research and development expense of $2.4 million and $376,000, respectively, and cost of sales expense of $1.5 million and $233,000, respectively, related to the performance units.

In connection with the vesting of performance units during the six months ended June 30, 2024 and 2023, 8,160 and 5,350 shares, respectively, with an aggregate fair value of $1.4 million and $775,000, respectively, were withheld in satisfaction of tax withholding obligations and are reflected as a financing activity within the Consolidated Statements of Cash Flows.

Employee Stock Purchase Plan

On April 7, 2009, the Board of Directors of the Company adopted an Employee Stock Purchase Plan (ESPP). The ESPP was approved by the Company’s shareholders and became effective on June 25, 2009. The Company has reserved 1,000,000 shares of common stock for issuance under the ESPP. Unless terminated by the Board of Directors, the ESPP will expire when all reserved shares have been issued.

Eligible employees may elect to contribute to the ESPP through payroll deductions during consecutive three-month purchase periods, the first of which began on July 1, 2009. Each employee who elects to participate will be deemed to have been granted an option to purchase shares of the Company’s common stock on the first day of the purchase period. Unless the employee opts out during the purchase period, the option will automatically be exercised on the last day of the period, which is the purchase date, based on the employee’s accumulated contributions to the ESPP. The purchase price will equal 85% of the lesser of the closing price per share of common stock on the first business day of the period or the last business day of the period.

Employees may allocate up to 10% of their base compensation to purchase shares of common stock under the ESPP; however, each employee may purchase no more than 12,500 shares on a given purchase date, and no employee may purchase more than $25,000 of common stock under the ESPP during a given calendar year.

During the six months ended June 30, 2024 and 2023, the Company issued 8,334 and 9,339 shares, respectively, of its common stock under the ESPP, resulting in proceeds of $1.2 million and $971,000, respectively.

For the three months ended June 30, 2024 and 2023, the Company recorded charges of $35,000 and $30,000, respectively, to selling, general and administrative expense, $61,000 and $54,000, respectively, to research and development expense, and $46,000 and $34,000, respectively, to cost of sales related to the ESPP equal to the amount of the discount and the value of the look-back feature. For the six months ended June 30, 2024 and 2023, the Company recorded charges of $72,000 and $70,000, respectively, to selling, general and administrative expense, $137,000 and $125,000, respectively, to research and development expense, and $97,000 and $75,000, respectively, to cost of sales related to the ESPP equal to the amount of the discount and the value of the look-back feature.

Scientific Advisory Board Awards

During the six months ended June 30, 2024 and 2023, the Company granted a total of 1,616 and 2,366 shares, respectively, of fully vested common stock to non-employee members of the Scientific Advisory Board for services performed in 2023 and 2022, respectively. The fair value of shares issued to members of the Scientific Advisory Board was $300,000 for both six-month periods.

17. RETIREMENT PLAN BENEFIT LIABILITY:

On March 18, 2010, the Human Capital Committee and the Board of Directors of the Company approved and adopted the Universal Display Corporation Supplemental Executive Retirement Plan (SERP). The SERP is currently unfunded and includes salary and bonus as part of the plan. The purpose of the SERP is to provide certain of the Company's key employees with supplemental pension benefits following a cessation of their employment and to encourage their continued employment with the Company. As of June 30, 2024, there were seven participants in the SERP. In December 2022, one of the participants retired and monthly SERP benefit payments commenced in January 2023. The total SERP benefit payments for the six months ended June 30, 2024 were $1.0 million.

The Company records amounts relating to the SERP based on calculations that incorporate various actuarial and other assumptions, including discount rates, rate of compensation increases, retirement dates and life expectancies. The net periodic costs are recognized as employees render the services necessary to earn the SERP benefits.

The components of net periodic pension cost were as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
Service cost	$ 203	$ 237	$ 415	$ 475
Interest cost	611	725	1,221	1,449
Curtailment charge	312	—	312	—
Amortization of prior service cost	10	204	21	408
Amortization of loss	—	120	—	240
Total net periodic benefit cost	$ 1,136	$ 1,286	$ 1,969	$ 2,572

18. COMMITMENTS AND CONTINGENCIES:

Commitments

Under the current research agreement with USC, the Company is obligated to make certain payments to USC based on work performed by it under that agreement, and by the University of Michigan (Michigan) under a subcontractor agreement that Michigan has with USC.

Under the terms of the current license agreement among the Company, Princeton and USC, the Company makes royalty payments to Princeton. See Note 11 for further explanation.

The Company has agreements with five executive officers and 11 senior level employees which provide for certain cash and other benefits upon termination of employment of the officer or employee in connection with a change in control of the Company. If a covered person's employment is terminated in connection with the change in control, the person is entitled to a lump-sum cash payment equal to two times (in the case of the executive officers) or either one or two times (in the case of the senior level employees) the sum of the average annual base salary and bonus of the person and immediate vesting of all stock options and other equity awards that may be outstanding at the date of the change in control, among other items.

In order to manage manufacturing lead times and help ensure adequate material supply, the Company entered into the New OLED Materials Agreement (see Note 13) that allows PPG to procure and produce inventory based upon criteria as defined by the Company. These purchase commitments consist of firm, noncancelable and unconditional commitments. In certain instances, this agreement allows the Company the option to reschedule and adjust the Company's requirements based on its business needs prior to firm orders being placed. As of June 30, 2024 and December 31, 2023, the Company had purchase commitments for inventory of $38.3 million and $29.8 million, respectively.

Patent Related Challenges and Oppositions

Each major jurisdiction in the world that issues patents provides both third parties and applicants an opportunity to seek a further review of an issued patent. The process for requesting and considering such reviews is specific to the jurisdiction that issued the patent in question, and generally does not provide for claims of monetary damages or a review of specific claims of infringement. The

conclusions made by the reviewing administrative bodies tend to be appealable and generally are limited in scope and applicability to the specific claims and jurisdiction in question.

The Company believes that opposition proceedings are frequently commenced in the ordinary course of business by third parties who may believe that one or more claims in a patent do not comply with the technical or legal requirements of the specific jurisdiction in which the patent was issued. The Company views these proceedings as reflective of its goal of obtaining the broadest legally permissible patent coverage permitted in each jurisdiction. Once a proceeding is initiated, as a general matter, the issued patent continues to be presumed valid until the jurisdiction's applicable administrative body issues a final non-appealable decision. Depending on the jurisdiction, the outcome of these proceedings could include affirmation, denial or modification of some or all of the originally issued claims. The Company believes that as OLED technology becomes more established and its patent portfolio increases in size, so will the number of these proceedings.

19. CONCENTRATION OF RISK:

Revenues and accounts receivable from the Company's largest customers were as follows (in thousands):

	% of Total Revenue for the Three Months Ended June 30,		% of Total Revenue for the Six Months Ended June 30,		Accounts Receivable as of
Customer	2024	2023	2024	2023	June 30, 2024
A	48%	36%	45%	33%	$ 11,815
B	23%	22%	24%	24%	$ 36,140
C	14%	13%	15%	17%	$ 41,170
D	5%	14%	5%	11%	$ 9,497

Revenues from outside of North America represented approximately 98% of consolidated revenue for both three-month periods ended June 30, 2024 and 2023, and 98% and 97% for the six months ended June 30, 2024 and 2023, respectively. Revenues by geographic area are as follows (in thousands):

	Three Months Ended June 30,		Six Months Ended June 30,	
Country	2024	2023	2024	2023
South Korea	$ 108,194	$ 82,029	$ 210,592	$ 148,089
China	45,236	57,520	102,706	114,947
Japan	1,256	1,509	2,510	3,156
Other non-U.S. locations	273	1,978	1,938	3,315
Total non-U.S. locations	154,959	143,036	317,746	269,507
United States	3,546	3,529	6,018	7,525
Total revenue	$ 158,505	$ 146,565	$ 323,764	$ 277,032

The Company attributes revenue to different geographic areas on the basis of the location of the customer.

Property and equipment, net by geographic area are as follows (in thousands):

	June 30, 2024	December 31, 2023
United States	$ 120,681	$ 118,250
Ireland	50,109	42,203
Other	14,684	14,697
Total property and equipment, net	$ 185,474	$ 175,150

Substantially all chemical materials were purchased from one supplier. See Note 13 for further explanation.

20. INCOME TAXES:

The Company is subject to income taxes in both the United States and foreign jurisdictions. The effective income tax rate was 19.3% and 22.4% for the three months ended June 30, 2024 and 2023, respectively, and 19.3% and 22.6% for the six months ended June 30, 2024 and 2023, respectively. The Company recorded an income tax expense of $12.6 million and $14.4 million for the three months ended June 30, 2024 and 2023, respectively, and $26.2 million for both six months ended June 30, 2024 and 2023. The discrepancy between the statutory tax rate and the effective tax rate is primarily due to the benefit of income taxed in foreign jurisdictions partially offset by nondeductible employee compensation and U.S. international tax (GILTI and Subpart F). The effective income tax

rate decreased due to a change in U.S. tax regulations associated with the ability to credit Chinese withholding taxes, as well as a change in the capitalization rules for research and development expenses.

In assessing the realizability of deferred tax assets, management considers whether it is more likely than not that some portion or all of the deferred tax assets will not be realized. The ultimate realization of deferred tax assets is dependent on the Company's ability to generate future taxable income to obtain benefit from the reversal of temporary differences, net operating loss carryforwards and tax credits. As part of its assessment, management considers the scheduled reversal of deferred tax liabilities, projected future taxable income, and tax planning strategies. At this time there is not sufficient evidence to release the valuation allowance that has been recorded for the New Jersey research and development credits and unrealized loss on investments. There are no indicators against the realizability of the remaining net deferred tax asset.

On December 27, 2018, the Korean Supreme Court, citing prior cases, held that only royalties paid with respect to Korean registered patents are considered Korean source income and subject to Korean withholding tax under the applicable law and interpretation of the Korea-U.S. Tax Treaty. The Company has incurred Korean withholding tax of $14.9 million for each of the years ended December 31, 2018, through December 31, 2022. Based on the Korean Supreme Court decision, a tax refund request on behalf of the Company was filed with the Korean National Tax Service (KNTS) for the entire period from January 1, 2018, to December 31, 2022. The Company received a formal rejection from the KNTS; and in May 2022 filed an appeal with the Korean Tax Tribunal. On December 18, 2023, the Company received a formal rejection from the Tax Tribunal. Anticipating the rejection of the appeal, in September 2023 the Company filed a petition to the District Court and is awaiting its decision. The Company has been advised by a prominent Korean law firm that there is a more-likely-than-not chance of success. As a result, the Company has recorded a long-term asset of $56.4 million and $60.1 million as of June 30, 2024, and December 31, 2023, respectively for the receipt of the Korean withholding tax. The Company also recorded foreign exchange loss of $1.4 million and $803,000 for the three months ended June 30, 2024 and 2023, respectively, and $3.7 million and $1.8 million for the six months ended June 30, 2024 and 2023, respectively, due to the fluctuation of the Korean Won to the U.S. Dollar and resulting remeasurement of this Won-denominated receivable. The Company will amend U.S. federal tax returns for the 2018 to 2022 years when the anticipated refund from KNTS is received to offset the additional tax liability. The Company has recorded a long-term liability of $15.7 million as of June 30, 2024, and December 31, 2023, for the estimated amounts due to the U.S. federal government based on the amendment of the Company's U.S. tax returns, indicating that lower withholding amounts were required.

The Company is not subject to examinations by the federal tax authority for the years prior to 2020. The Company's state and foreign tax returns are open for a period of generally three to four years. The Company is under California tax audit for 2019 and 2020 years, which is in the information-collecting stage.

The above estimates may change in the future and upon settlement.

21. REVENUE RECOGNITION:

The Company recognizes revenue in accordance with ASC Topic 606, Revenue from Contracts with Customers (Topic 606). The standard establishes the principles that an entity shall apply to report useful information to users of financial statements about the nature, amount, timing, and uncertainty of revenue and cash flows from a contract with a customer.

For the three months ended June 30, 2024 and 2023, the Company recorded 98% and 97%, respectively, of its revenue from OLED related sales and 2% and 3%, respectively, from the providing of services through Adesis. For the six months ended June 30, 2024 and 2023, the Company recorded 98% and 96%, respectively, of its revenue from OLED related sales and 2% and 4%, respectively, from the providing of services through Adesis.

Contract Balances

The following table provides information about assets and liabilities associated with our contracts from customers (in thousands):

		As of June 30, 2024
Accounts receivable	$	124,386
Short-term unbilled receivables		41,477
Long-term unbilled receivables		9,774
Short-term contract assets		2,858
Long-term contract assets		8,040
Short-term deferred revenue		63,784
Long-term deferred revenue		6,732

Short-term and long-term unbilled receivables and contract assets are classified as other current assets and other assets, respectively, on the Consolidated Balance Sheets. Contract assets represent consideration related to the renewal of customer contracts which is recognized over the contract term based on material units sold. The deferred revenue balance as of June 30, 2024 will be recognized as materials are shipped to customers over the remaining contract periods. As of June 30, 2024, the Company had $50.8 million of backlog associated with committed purchase orders from its customers for phosphorescent emitter material. These orders are anticipated to be fulfilled within the next 90 days.

Significant changes in the assets and liabilities balances associated with the Company's contracts from customers for the six months ended June 30, 2024 and 2023 are as follows (in thousands):

	Six Months Ended June 30, 2024	
	Assets	Liabilities
Balance at December 31, 2023	$ 42,134	$ (59,719)
Revenue recognized that was previously included in deferred revenue, net	—	71,402
Increases due to cash received	—	(82,928)
Cumulative catch-up adjustment arising from changes in estimates of transaction price, net	—	729
Unbilled receivables recorded, net	53,816	—
Contract assets recorded, net	(1,078)	—
Transferred to receivables from unbilled receivables	(32,723)	—
Net change	20,015	(10,797)
Balance at June 30, 2024	$ 62,149	$ (70,516)

	Six Months Ended June 30, 2023	
	Assets	Liabilities
Balance at December 31, 2022	$ 38,457	$ (63,878)
Revenue recognized that was previously included in deferred revenue, net	—	100,242
Increases due to cash received	—	(91,111)
Cumulative catch-up adjustment arising from changes in estimates of transaction price, net	—	6,605
Unbilled receivables recorded, net	9,404	—
Contract assets recorded, net	(1,069)	—
Transferred to receivables from unbilled receivables	(19,983)	—
Net change	(11,648)	15,736
Balance at June 30, 2023	$ 26,809	$ (48,142)

The cumulative catch-up adjustment recorded to revenue arising from changes in estimates of transaction price, net was an increase of $729,000 for the six months ended June 30, 2024 as compared to an increase of $6.6 million for the six months ended June 30, 2023. For the six months ended June 30, 2023, the adjustment resulted from an increase in the average price per gram that was primarily due to the decrease in anticipated demand by several of the Company's customers over the remaining lives of their contracts, resulting from changes in global macroeconomic factors.

22. NET INCOME PER COMMON SHARE:

The Company computes earnings per share in accordance with ASC Topic 260, *Earnings per Share*, which requires earnings per share (EPS) for each class of stock to be calculated using the two-class method. The two-class method is an allocation of income between the holders of common stock and the Company's participating security holders. Under the two-class method, income for the reporting period is allocated between common shareholders and other security holders based on their respective participation rights in undistributed income. Unvested share-based payment awards that contain non-forfeitable rights to dividends or dividend equivalents are participating securities and, therefore, are included in computing earnings per share pursuant to the two-class method.

Basic net income per common share is computed by dividing net income allocated to common shareholders by the weighted-average number of shares of common stock outstanding for the period excluding unvested restricted stock units and performance units. Net income allocated to the holders of the Company's unvested restricted stock awards is calculated based on the shareholders proportionate share of weighted average shares of common stock outstanding on an if-converted basis.

For purposes of determining diluted net income per common share, basic net income per share is further adjusted to include the effect of potential dilutive common shares outstanding, including restricted stock units, performance units and the impact of shares to be issued under the Company's Employee Stock Purchase Plan.

The following table is a reconciliation of net income and the shares used in calculating basic and diluted net income per common share for the three and six months ended June 30, 2024 and 2023 (in thousands, except share and per share data):

	Three Months Ended June 30,		Six Months Ended June 30,	
	2024	2023	2024	2023
Numerator:				
Net income	$ 52,337	$ 49,678	$ 109,190	$ 89,517
Adjustment for Basic EPS:				
Earnings allocated to unvested shareholders	(120)	(250)	(318)	(465)
Adjusted net income	$ 52,217	$ 49,428	$ 108,872	$ 89,052
Denominator:				
Weighted average common shares outstanding – Basic	47,549,843	47,572,971	47,553,969	47,548,404
Effect of dilutive shares:				
Common stock equivalents arising from stock options and ESPP	441	325	903	1,265
Restricted stock awards and units and performance units	77,829	44,819	73,598	43,988
Weighted average common shares outstanding – Diluted	47,628,113	47,618,115	47,628,470	47,593,657
Net income per common share:				
Basic	$ 1.10	$ 1.04	$ 2.29	$ 1.87
Diluted	$ 1.10	$ 1.04	$ 2.29	$ 1.87

For the three months ended June 30, 2024 and 2023, the combined effects of unvested restricted stock awards, restricted stock units, performance unit awards and stock options of 17,540 and 75,251, respectively, were excluded from the calculation of diluted EPS as their impact would have been antidilutive. For the six months ended June 30, 2024 and 2023, the combined effects of unvested restricted stock awards, restricted stock units, performance unit awards and stock options of 44,535 and 31,578, respectively, were excluded from the calculation of diluted EPS as their impact would have been antidilutive.

ITEM 2. *MANAGEMENT'S DISCUSSION AND ANALYSIS OF FINANCIAL CONDITION AND RESULTS OF OPERATIONS*

The following discussion and analysis of our financial condition and results of operations should be read in conjunction with the unaudited Consolidated Financial Statements and related notes above.

CAUTIONARY STATEMENT CONCERNING FORWARD-LOOKING STATEMENTS

This discussion and analysis contains some "forward-looking statements." Forward-looking statements concern possible or assumed future results of operations, including descriptions of our business strategies and customer relationships. These statements often include words such as "believe," "expect," "anticipate," "intend," "plan," "estimate," "seek," "will," "may" or similar expressions. These statements are based on assumptions that we have made in light of our experience in the industry, as well as our perceptions of historical trends, current conditions, expected future developments and other factors that we believe are appropriate in these circumstances.

As you read and consider this discussion and analysis, you should not place undue reliance on any forward-looking statements. You should understand that these statements involve substantial risk and uncertainty and are not guarantees of future performance or results. They depend on many factors that are discussed further in the sections entitled (Risk Factors) in our Annual Report on Form 10-K for the year ended December 31, 2023, as supplemented by disclosures in Item 1A of Part II below. Changes or developments in any of these areas could affect our financial results or results of operations and could cause actual results to differ materially from those contemplated in the forward-looking statements.

All forward-looking statements speak only as of the date of this report or the documents incorporated by reference, as the case may be. We do not undertake any duty to update any of these forward-looking statements to reflect events or circumstances after the date of this report or to reflect the occurrence of unanticipated events.

OVERVIEW

We are a leader in the research, development and commercialization of organic light emitting diode (OLED) technologies and materials for use in display applications, such as mobile phones, televisions, monitors, wearables, tablets, portable media devices, notebook computers, personal computers and automotive applications, as well as specialty and general lighting products. Since 1994, we have been engaged and expect to continue to be primarily engaged, in funding and performing research and development activities relating to OLED technologies and materials, and commercializing these technologies and materials. We derive our revenue primarily from the following:

- sales of OLED materials for evaluation, development and commercial manufacturing;
- intellectual property and technology licensing;
- technology development and support, including third-party collaboration efforts and providing support to third parties for commercialization of their OLED products; and
- contract research services in the areas of chemical materials synthesis research, development and commercialization for non-OLED applications.

Material sales relate to our sale of OLED materials for incorporation into our customers' commercial OLED products or for their OLED development and evaluation activities. Material sales are generally recognized at the time title passes, which is typically at the time of shipment or at the time of delivery, depending upon the contractual agreement between the parties.

We receive license and royalty payments under certain commercial, development and technology evaluation agreements, some of which are non-refundable advances. These payments may include royalty and license fees made pursuant to license agreements and also license fees included as part of certain commercial supply agreements. These payments are included in the estimate of total contract consideration by customer and recognized as revenue over the contract term based on material units sold at the estimated per unit fee over the life of the contract.

On December 2, 2022, we entered into a commercial patent license agreement with Samsung Display Co., Ltd. (SDC), replacing a previous license agreement that had been in place since 2018. This agreement, which covers the manufacture and sale of specified OLED display materials, was effective as of January 1, 2023 and lasts through the end of 2027 with an additional two-year extension option for SDC. Under this agreement, we are being paid a license fee, which includes quarterly and annual payments over the agreement

term of five years. The agreement conveys to SDC the non-exclusive right to use certain of our intellectual property assets for a limited period of time that is less than the estimated life of the assets.

At the same time that we entered into the current commercial license agreement with SDC, we also entered into a material purchase agreement with SDC, which lasts for the same term as the license agreement and is subject to the same extension option. This new material purchase agreement replaced a previous purchase agreement that had been in place since 2018. Under the material purchase agreement, SDC agrees to purchase from us a minimum amount of red and green phosphorescent emitter materials for use in the manufacture of licensed products. This minimum commitment is subject to SDC's requirements for phosphorescent emitter materials and our ability to meet these requirements over the term of the supplemental agreement.

In 2015, we entered into an OLED patent license agreement and an OLED commercial supply agreement with LG Display Co., Ltd. (LG Display), which were effective as of January 1, 2015. The terms of these agreements were extended by a January 1, 2021 amendment through the end of 2025. The patent license agreement provides LG Display a non-exclusive, royalty bearing portfolio license to make and sell OLED displays under our patent portfolio. The patent license calls for license fees, prepaid royalties and running royalties on licensed products. The OLED commercial supply agreement provides for the sales of materials for use by LG Display, which may include phosphorescent emitters and host materials. The agreements provide for certain other minimum obligations relating to the volume of material sales anticipated over the life of the agreements as well as minimum royalty revenue.

In 2023, we entered into new long-term, multi-year agreements with BOE Technology Group Co., Ltd. (BOE). Under these agreements, we have granted BOE non-exclusive license rights under various patents owned or controlled by us to manufacture and sell OLED display products. We also supply phosphorescent OLED materials to BOE for use in its licensed products.

In 2019, we entered into an evaluation and commercial supply relationship with Wuhan China Star Optoelectronics Semiconductor Display Technology Co., Ltd. (CSOT). In 2020, we entered into long-term, multi-year agreements with CSOT. Under these agreements, we have granted CSOT non-exclusive license rights under various patents owned or controlled by us to manufacture and sell OLED display products. We also supply phosphorescent OLED materials to CSOT for use in its licensed products.

In 2024, we entered into new long-term, multi-year agreements with Visionox Technology, Inc. (Visionox). Under these agreements, we have granted Visionox non-exclusive license rights under various patents owned or controlled by us to manufacture and sell OLED display products. Additionally, we supply phosphorescent OLED materials to Visionox for use in its licensed products.

In 2016, we entered into long-term, multi-year OLED patent license and material purchase agreements with Tianma Micro-electronics Co., Ltd. (Tianma). Under the license agreement, we have granted Tianma non-exclusive license rights under various patents owned or controlled by us to manufacture and sell OLED display products. The license agreement calls for license fees and running royalties on Tianma's sales of licensed products. Additionally, we supply phosphorescent OLED materials to Tianma for use in its licensed products. In 2021, we mutually agreed to extend the terms of both the patent license and material purchase agreements for an additional multi-year term.

In 2016, we acquired Adesis, Inc. (Adesis) which has operations in New Castle and Wilmington, Delaware. Adesis is a contract development and manufacturing organization (CDMO) that provides support services on a contractual basis to third-party customers in the OLED, pharma, biotech, catalysis and other industries. As of June 30, 2024, Adesis employed a team of 137 research scientists, chemists, engineers and laboratory technicians. Prior to our acquisition of Adesis, we utilized more than 50% of Adesis' technology service and production output. We continue to utilize a significant portion of its technology research capacity for the benefit of our OLED technology development, and Adesis uses the remaining capacity to operate as a CDMO by providing contract research services for non-OLED applications to third-party customers in the above-mentioned industries. Contract research services revenue is earned by providing chemical materials synthesis research, development and commercialization for non-OLED applications on a contractual basis for those third-party customers.

In June 2020, a wholly-owned subsidiary, OVJP Corporation (OVJP Corp), was formed as a Delaware corporation. Based in California, OVJP Corp was founded to advance the commercialization of our proprietary Organic Vapor Jet Printing (OVJP) technology. As of June 30, 2024, 2024, OVJP Corp employed a team of 26 research, mechanical, electrical and software engineers and laboratory technicians. As a direct printing technique, OVJP technology has the potential to offer high deposition rates for large-area OLEDs. In addition, OVJP technology reduces OLED material waste associated with use of a shadow mask (i.e., the waste of material that deposits on the shadow mask itself when fabricating an OLED). By comparison to inkjet printing, an OVJP process does not use liquid solvents and therefore the OLED materials utilized are not limited by their viscosity or solvent solubility. OVJP also avoids generation of solvent wastes and eliminates the additional step of removing residual solvent from the OLED device. We believe the successful implementation of the OVJP technology has the potential to increase the addressable market for large-size OLED panels while also serving another potential growth market for our proprietary PHOLED materials and technologies.

In February 2021, we announced the establishment of a new manufacturing site in Shannon, Ireland and an agreement between UDC Ireland Limited and PPG for the production of our OLED materials. We purchased the site during September 2023. When fully operational, the new facility is expected to double our production capacity and allow for the diversification of our manufacturing base for phosphorescent emitters. The first phase of facility improvements has been completed and operations commenced in June 2022.

We also generate technology development and support revenue earned from development and technology evaluation agreements and commercialization assistance fees.

We anticipate fluctuations in our annual and quarterly results of operations due to uncertainty regarding, among other factors:

- the timing, cost and volume of sales of our OLED materials;
- the timing of our receipt of license fees and royalties, as well as fees for future technology development and evaluation;
- the timing and magnitude of expenditures we may incur in connection with our ongoing research and development and patent-related activities; and
- the timing and financial consequences of our formation of new business relationships and alliances.

RESULTS OF OPERATIONS

Comparison of the Three Months Ended June 30, 2024 and 2023

	Three Months Ended June 30,		
	2024	2023	Increase (Decrease)
REVENUE:			
Material sales	$ 95,442	$ 77,107	$ 18,335
Royalty and license fees	59,551	64,399	(4,848)
Contract research services	3,512	5,059	(1,547)
Total revenue	158,505	146,565	11,940
COST OF SALES	38,328	32,139	6,189
Gross margin	120,177	114,426	5,751
OPERATING EXPENSES:			
Research and development	36,826	32,318	4,508
Selling, general and administrative	19,841	17,077	2,764
Amortization of acquired technology and other intangible assets	4,549	3,994	555
Patent costs	2,401	2,229	172
Royalty and license expense	123	169	(46)
Total operating expenses	63,740	55,787	7,953
OPERATING INCOME	56,437	58,639	(2,202)
Interest income, net	9,913	6,198	3,715
Other loss, net	(1,460)	(784)	(676)
Interest and other loss, net	8,453	5,414	3,039
INCOME BEFORE INCOME TAXES	64,890	64,053	837
INCOME TAX EXPENSE	(12,553)	(14,375)	1,822
NET INCOME	$ 52,337	$ 49,678	$ 2,659

Revenue

Our total material sales were $95.4 million for the three months ended June 30, 2024, as compared to $77.1 million for the three months ended June 30, 2023, an increase of 24% with a commensurate increase in unit material volume of 23%. The increase in material sales was primarily due to strengthened demand for our emitter materials.

- Green emitter sales for the three months ended June 30, 2024, which include our yellow-green emitters, were $71.6 million as compared to $57.9 million for the three months ended June 30, 2023, with unit material volumes increasing by 22%.
- Red emitter sales for the three months ended June 30, 2024 were $22.5 million as compared to $16.7 million for the three months ended June 30, 2023, with unit material volumes increasing by 36%.

Revenue from royalty and license fees was $59.6 million for the three months ended June 30, 2024 as compared to $64.4 million for the three months ended June 30, 2023, a decrease of 8%. The decrease was primarily the result of changes in customer mix.

The cumulative catch-up adjustment recorded to revenue arising from changes in estimates of transaction price, net was an increase of $1.2 million for the three months ended June 30, 2024 as compared to an increase of $922,000 for the three months ended June 30, 2023.

Contract research services revenue was $3.5 million for the three months ended June 30, 2024 as compared to $5.1 million for the three months ended June 30, 2023, a decrease of 31%. The decrease in contract research services revenue was primarily due to the timing of completion of several contract research projects by our subsidiary, Adesis, during the three months ended June 30, 2024. Revenue from contract research services consists of revenue earned by Adesis, which provides support services on a contractual basis to third-party customers in the pharma, biotech, catalysis and other industries.

Cost of sales

Cost of sales for the three months ended June 30, 2024 increased by $6.2 million as compared to the three months ended June 30, 2023, primarily due to an increase in the level of materials sales. As a result of the increase in revenue from material sales, partially offset by a decrease in revenue from royalty and license fees, gross margin for the three months ended June 30, 2024 increased by $5.8 million as compared to the three months ended June 30, 2023, with gross margin as a percentage of revenue decreasing to 76% from 78%.

Research and development

Research and development expenses increased to $36.8 million for the three months ended June 30, 2024, as compared to $32.3 million for the three months ended June 30, 2023. The increase in research and development expenses was primarily due to higher operating costs, including increased employee-related expenses, contract research costs and PPG development activity.

Selling, general and administrative

Selling, general and administrative expenses increased to $19.8 million for the three months ended June 30, 2024, as compared to $17.1 million for the three months ended June 30, 2023. The increase in selling, general and administrative expenses was primarily due to an increase in stock-based compensation expense.

Amortization of acquired technology and other intangible assets

Amortization of acquired technology and other intangible assets was $4.5 million for the three months ended June 30, 2024, as compared to $4.0 million for the three months ended June 30, 2023. The increase was due to the commencement of amortization expense associated with the Merck KGaA patent acquisition that was completed on April 28, 2023.

Patent costs

Patent costs increased to $2.4 million for the three months ended June 30, 2024, as compared to $2.2 million for the three months ended June 30, 2023.

Royalty and license expense

Royalty and license expense decreased to $123,000 for the three months ended June 30, 2024, as compared to $169,000 for the three months ended June 30, 2023.

Interest and other loss, net

Interest income, net was $9.9 million for the three months ended June 30, 2024, as compared to $6.2 million for the three months ended June 30, 2023. The increase in interest income, net was primarily due to an increase in bond yields on available-for-sale investments held during the three months ended June 30, 2024 as compared to the three months ended June 30, 2023 as well as higher available-for-sale investment balances. Other loss, net primarily consisted of net exchange gains and losses on foreign currency transactions, net investment gains and losses, and rental income. We recorded other loss, net of $1.5 million for the three months ended June 30, 2024 as compared to $784,000 for the three months ended June 30, 2023.

Income tax expense

We are subject to income taxes in the United States and foreign jurisdictions. The effective income tax rate was 19.3% and 22.4% for the three months ended June 30, 2024 and 2023, respectively, and we recorded income tax expense of $12.6 million and $14.4 million, respectively, for those periods. The effective income tax rate decreased due to a change in U.S. tax regulations associated with the ability to credit Chinese withholding taxes, as well as a change in the capitalization rules for research and development expenses.

Comparison of the Six months ended June 30, 2024 and 2023

	Six Months Ended June 30,		
	2024	2023	Increase (Decrease)
REVENUE:			
Material sales	$ 188,726	$ 147,297	$ 41,429
Royalty and license fees	127,819	119,609	8,210
Contract research services	7,219	10,126	(2,907)
Total revenue	323,764	277,032	46,732
COST OF SALES	75,297	65,109	10,188
Gross margin	248,467	211,923	36,544
OPERATING EXPENSES:			
Research and development	74,811	63,741	11,070
Selling, general and administrative	39,093	32,473	6,620
Amortization of acquired technology and other intangible assets	9,097	6,885	2,212
Patent costs	4,383	4,484	(101)
Royalty and license expense	1,774	333	1,441
Total operating expenses	129,158	107,916	21,242
OPERATING INCOME	119,309	104,007	15,302
Interest income, net	19,481	13,165	6,316
Other loss, net	(3,403)	(1,487)	(1,916)
Interest and other loss, net	16,078	11,678	4,400
INCOME BEFORE INCOME TAXES	135,387	115,685	19,702
INCOME TAX EXPENSE	(26,197)	(26,168)	(29)
NET INCOME	$ 109,190	$ 89,517	$ 19,673

Revenue

Our total material sales were $188.7 million for the six months ended June 30, 2024, as compared to $147.3 million for the six months ended June 30, 2023, an increase of 28% with a commensurate increase in unit material volume of 30%. The increase in material sales was primarily due to strengthened demand for our emitter materials.

- Green emitter sales for the six months ended June 30, 2024, which include our yellow-green emitters, were $142.4 million as compared to $111.6 million for the six months ended June 30, 2023, with unit material volumes increasing by 27%.
- Red emitter sales for the six months ended June 30, 2024 were $43.1 million as compared to $32.8 million for the six months ended June 30, 2023, with unit material volumes increasing by 41%.

Revenue from royalty and license fees was $127.8 million for the six months ended June 30, 2024 as compared to $119.6 million for the six months ended June 30, 2023, an increase of 7%. The increase in royalty and license fees was primarily the result of higher unit material volume, partially offset by changes in customer mix and the change in the cumulative catch-up adjustment between periods as described below.

The cumulative catch-up adjustment recorded to revenue arising from changes in estimates of transaction price, net was an increase of $729,000 for the six months ended June 30, 2024 as compared to an increase of $6.6 million for the six months ended June 30, 2023. For the six months ended June 30, 2023, the adjustment resulted from an increase in the average price per gram that was primarily due to the decrease in anticipated demand by several of our customers over the remaining lives of their contracts, resulting from changes in global macroeconomic factors.

Contract research services revenue was $7.2 million for the six months ended June 30, 2024 as compared to $10.1 million for the six months ended June 30, 2023, a decrease of 29%. The decrease in contract research services revenue was primarily due to the timing

of completion of several contract research projects by our subsidiary, Adesis, during the six months ended June 30, 2024. Revenue from contract research services consists of revenue earned by Adesis, which provides support services on a contractual basis to third-party customers in the pharma, biotech, catalysis and other industries.

Cost of sales

Cost of sales for the six months ended June 30, 2024 increased by $10.2 million as compared to the six months ended June 30, 2023, primarily due to an increase in the level of materials sales, partially offset by a $3.8 million decrease in inventory reserve expense. As a result of the increase in revenue from material sales and royalty and licenses fees, gross margin for the six months ended June 30, 2024 increased by $36.5 million as compared to the six months ended June 30, 2023, with gross margin as a percentage of revenue increasing to 77% from 76%.

Research and development

Research and development expenses increased to $74.8 million for the six months ended June 30, 2024, as compared to $63.7 million for the six months ended June 30, 2023. The increase in research and development expenses was primarily due to higher operating costs, including increased employee-related expenses, PPG development activity and contract research costs.

Selling, general and administrative

Selling, general and administrative expenses increased to $39.1 million for the six months ended June 30, 2024, as compared to $32.5 million for the six months ended June 30, 2023. The increase in selling, general and administrative expenses was primarily due to an increase in employee-related expenses, including higher stock-based compensation and salaries expenses.

Amortization of acquired technology and other intangible assets

Amortization of acquired technology and other intangible assets was $9.1 million for the six months ended June 30, 2024, as compared to $6.9 million for the six months ended June 30, 2023. The increase was due to the commencement of amortization expense associated with the Merck KGaA patent acquisition that was completed on April 28, 2023.

Patent costs

Patent costs decreased to $4.4 million for the six months ended June 30, 2024, as compared to $4.5 million for the six months ended June 30, 2023.

Royalty and license expense

Royalty and license expense increased to $1.8 million for the six months ended June 30, 2024, as compared to $333,000 for the six months ended June 30, 2023. The increase was due to a one-time expense of $1.5 million in connection with an amendment to our existing amended license agreement, effective as of October 9, 1997, with Princeton University and the University of Southern California.

Interest and other loss, net

Interest income, net was $19.5 million for the six months ended June 30, 2024, as compared to $13.2 million for the six months ended June 30, 2023. The increase in interest income, net was primarily due to an increase in bond yields on available-for-sale investments held during the six months ended June 30, 2024 as compared to the six months ended June 30, 2023 as well as higher available-for-sale investment balances. Other loss, net primarily consisted of net exchange gains and losses on foreign currency transactions, net investment gains and losses, and rental income. We recorded other loss, net of $3.4 million for the six months ended June 30, 2024 as compared to $1.5 million for the six months ended June 30, 2023.

Income tax expense

We are subject to income taxes in the United States and foreign jurisdictions. The effective income tax rate was 19.3% and 22.6% for the six months ended June 30, 2024 and 2023, respectively, and we recorded income tax expense of $26.2 million for both of those periods. The effective income tax rate decreased due to a change in U.S. tax regulations associated with the ability to credit Chinese withholding taxes, as well as a change in the capitalization rules for research and development expenses.

Liquidity and Capital Resources

Our principal sources of liquidity are our cash and cash equivalents and short-term investments. As of June 30, 2024, we had cash and cash equivalents of $92.9 million, short-term investments of $437.7 million, and long-term U.S. Government bonds investments of $348.4 million for a total of $879.0 million. This compares to cash and cash equivalents of $92.0 million, short-term investments of $422.1 million, and long-term U.S. Government bond investments of $285.5 million for a total of $799.6 million as of December 31, 2023.

Cash provided by operating activities for the six months ended June 30, 2024 was $139.2 million resulting from $109.2 million of net income and $30.0 million from non-cash items including stock-based compensation and depreciation. Operating assets and liabilities were unchanged from December 31, 2023 on a net basis, but reflected an increase in other assets of $38.9 million, a decrease in accounts receivable of $15.5 million, an increase in accounts payable and accrued expenses of $12.4 million, an increase in deferred revenue of $10.8 million, a decrease in inventory of $3.9 million, and a decrease in other liabilities of $3.7 million.

Cash provided by operating activities for the six months ended June 30, 2023 was $57.4 million resulting from $89.5 million of net income and $13.2 million from non-cash items including depreciation, stock-based compensation and deferred income taxes, partially offset by a $45.3 million reduction due to changes in our operating assets and liabilities. Changes in our operating assets and liabilities related to a decrease in other liabilities of $22.3 million, a decrease in accounts payable and accrued expenses of $17.7 million, an increase in accounts receivable of $16.7 million and a decrease in deferred revenue of $15.7 million, partially offset by a decrease in other assets of $19.7 million and a decrease in inventory of $7.4 million.

Cash used in investing activities was $93.5 million for the six months ended June 30, 2024, as compared to $17.5 million for the six months ended June 30, 2023. The increase was due to timing of maturities and purchases of investments resulting in net purchases of $77.1 million for the six months ended June 30, 2024, as compared to net sales and maturities of $75.9 million for the six months ended June 30, 2023, partially offset by a decrease in purchases of intangibles and property, plant and equipment of $77.0 million. The decrease in the purchases of intangibles and property, plant and equipment during the six months ended June 30, 2024 was primarily due to the Merck KGaA patent acquisition on April 28, 2023.

Cash used in financing activities was $44.8 million for the six months ended June 30, 2024, as compared to $39.9 million for the six months ended June 30, 2023. The increase was due to an increase in the cash payment of dividends in the current year of $5.2 million, partially offset by an increase in the proceeds from the issuance of common stock of $216,000 and a decrease in the payment of withholding taxes related to stock-based compensation to employees of $100,000.

Working capital was $807.5 million as of June 30, 2024, as compared to $798.3 million as of December 31, 2023. The increase was primarily due to increases in other current assets and short-term investments, partially offset by increases in deferred revenue and accounts payable and a decrease in accounts receivable.

We anticipate, based on our internal forecasts and assumptions relating to our operations (including, among others, assumptions regarding our working capital requirements, the progress of our research and development efforts, the availability of sources of funding for our research and development work, and the timing and costs associated with the preparation, filing, prosecution, maintenance, defense and enforcement of our patents and patent applications), that we have sufficient cash, cash equivalents and short-term investments to meet our obligations for at least the next twelve months.

We believe that potential additional financing sources for us include long-term and short-term borrowings and public and private sales of our equity and debt securities. It should be noted, however, that additional funding may be required in the future for research, development and commercialization of our OLED technologies and materials, to obtain, maintain and enforce patents respecting these technologies and materials, and for working capital and other purposes, the timing and amount of which are difficult to ascertain. There can be no assurance that additional funds will be available to us when needed, on commercially reasonable terms or at all, particularly in the current economic environment.

Critical Accounting Policies and Estimates

The discussion and analysis of our financial condition and results of operations is based on our Consolidated Financial Statements, which have been prepared in accordance with U.S. generally accepted accounting principles. The preparation of these Consolidated Financial Statements requires us to make estimates and judgments that affect our reported assets and liabilities, revenues and expenses, and other financial information. Actual results may differ significantly from our estimates under other assumptions and conditions.

We believe that our accounting policies related to revenue recognition and deferred revenue, inventories, and income taxes are our "critical accounting policies" as contemplated by the SEC.

Refer to our Annual Report on Form 10-K for the year ended December 31, 2023, for additional discussion of our critical accounting policies.

Contractual Obligations

Refer to our Annual Report on Form 10-K for the year ended December 31, 2023 for a discussion of our contractual obligations.

Off-Balance Sheet Arrangements

As of June 30, 2024, we had no off-balance sheet arrangements in the nature of guarantee contracts, retained or contingent interests in assets transferred to unconsolidated entities (or similar arrangements serving as credit, liquidity or market risk support to unconsolidated entities for any such assets), or obligations (including contingent obligations) arising out of variable interests in unconsolidated entities providing financing, liquidity, market risk or credit risk support to us, or that engage in leasing, hedging or research and development services with us.

ITEM 3. *QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK*

We do not utilize financial instruments for trading purposes and hold no derivative financial instruments, other financial instruments or derivative commodity instruments that could expose us to significant market risk other than our investments disclosed in "Fair Value Measurements" in Note 4 to the Consolidated Financial Statements. We generally invest in investment grade financial instruments to reduce our exposure related to investments. Our primary market risk exposure with regard to such financial instruments is to changes in interest rates, which would impact interest income earned on investments. However, based upon the conservative nature of our investment portfolio and current experience, we do not believe a decrease in investment yields would have a material negative effect on our interest income.

Substantially all our revenue is derived from outside of North America. All revenue is primarily denominated in U.S. dollars and therefore we bear no significant foreign exchange risk.

ITEM 4. *CONTROLS AND PROCEDURES*

Evaluation of Disclosure Controls and Procedures

Our management, with the participation of our Chief Executive Officer and Chief Financial Officer, evaluated the effectiveness of our disclosure controls and procedures as of June 30, 2024. Based on that evaluation, our Chief Executive Officer and Chief Financial Officer concluded that our disclosure controls and procedures, as of the end of the period covered by this report, are effective to provide reasonable assurance that the information required to be disclosed by us in reports filed or submitted under the Securities Exchange Act of 1934, as amended, is (i) recorded, processed, summarized and reported within the time periods specified in the SEC's rules and forms, and (ii) accumulated and communicated to our management, including the Chief Executive Officer and Chief Financial Officer, as appropriate to allow timely decisions regarding disclosure. However, a controls system, no matter how well designed and operated, cannot provide absolute assurance that the objectives of the controls system are met, and no evaluation of controls can provide absolute assurance that all control issues and instances of fraud, if any, within a company have been detected.

Changes in Internal Control over Financial Reporting

There were no changes in our internal control over financial reporting during the quarter ended June 30, 2024 that have materially affected, or are reasonably likely to materially affect, our internal control over financial reporting.

PART II – OTHER INFORMATION

ITEM 1. *LEGAL PROCEEDINGS*

Patent Related Challenges and Oppositions

Each major jurisdiction in the world that issues patents provides both third parties and applicants an opportunity to seek a further review of an issued patent. The process for requesting and considering such reviews is specific to the jurisdiction that issued the patent in question, and generally does not provide for claims of monetary damages or a review of specific claims of infringement. The conclusions made by the reviewing administrative bodies tend to be appealable and generally are limited in scope and applicability to the specific claims and jurisdiction in question.

We believe that opposition proceedings are frequently commenced in the ordinary course of business by third parties who may believe that one or more claims in a patent do not comply with the technical or legal requirements of the specific jurisdiction in which the patent was issued. We view these proceedings as reflective of its goal of obtaining the broadest legally permissible patent coverage permitted in each jurisdiction. Once a proceeding is initiated, as a general matter, the issued patent continues to be presumed valid until the jurisdiction's applicable administrative body issues a final non-appealable decision. Depending on the jurisdiction, the outcome of these proceedings could include affirmation, denial or modification of some or all of the originally issued claims. We believe that as OLED technology becomes more established and its patent portfolio increases in size, so will the number of these proceedings.

ITEM 1A. *RISK FACTORS*

There have been no material changes to the risk factors previously discussed in Part I, Item 1A "Risk Factors" in our Annual Report on Form 10-K for the year ended December 31, 2023.

ITEM 2. *UNREGISTERED SALES OF EQUITY SECURITIES AND USE OF PROCEEDS*

None.

ITEM 3. *DEFAULTS UPON SENIOR SECURITIES*

None.

ITEM 4. *MINE SAFETY DISCLOSURES*

Not applicable.

ITEM 5. *OTHER INFORMATION*

Rule 10b5-1 Trading Plans

During the quarter ended June 30, 2024, none of our directors or executive officers entered into, modified or terminated, contracts, instructions or written plans for the sale or purchase of our securities that were intended to satisfy the affirmative defense conditions of Rule 10b5-1.

ITEM 6. *EXHIBITS*

The following is a list of the exhibits filed as part of this report. Where so indicated by footnote, exhibits that were previously filed are incorporated by reference. For exhibits incorporated by reference, the location of the exhibit in the previous filing is indicated parenthetically, together with a reference to the filing indicated by footnote.

Exhibit Number	Description
31.1*	Certifications of Steven V. Abramson, Chief Executive Officer, as required by Rule 13a-14(a) or Rule 15d-14(a)
31.2*	Certifications of Brian Millard, Chief Financial Officer, as required by Rule 13a-14(a) or Rule 15d-14(a)
32.1**	Certifications of Steven V. Abramson, Chief Executive Officer, as required by Rule 13a-14(b) or Rule 15d-14(b), and by 18 U.S.C. Section 1350. (This exhibit shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section. Further, this exhibit shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.)
32.2**	Certifications of Brian Millard, Chief Financial Officer, as required by Rule 13a-14(b) or Rule 15d-14(b), and by 18 U.S.C. Section 1350. (This exhibit shall not be deemed "filed" for purposes of Section 18 of the Securities Exchange Act of 1934, as amended, or otherwise subject to the liability of that section. Further, this exhibit shall not be deemed to be incorporated by reference into any filing under the Securities Act of 1933, as amended, or the Securities Exchange Act of 1934, as amended.)
101.INS*	Inline XBRL Instance Document – the instance document does not appear in the Interactive Data File because its XBRL tags are embedded within the Inline XBRL document.
101.SCH*	Inline XBRL Taxonomy Extension Schema with Embedded Linkbase Documents.
104	The cover page of this Quarterly Report on Form 10-Q for the quarter ended June 30, 2024 formatted in Inline XBRL (included in Item 101.INS)

Explanation of footnotes to listing of exhibits:

*	Filed herewith.
**	Furnished herewith.

SIGNATURES

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized.

UNIVERSAL DISPLAY CORPORATION

Date: August 1, 2024

By: /s/ Brian Millard
Brian Millard
Vice President, Chief Financial Officer and Treasurer