SECURITIES AND EXCHANGE COMMISSION WASHINGTON, D.C. 20549

FORM S-3 REGISTRATION STATEMENT UNDER THE SECURITIES ACT OF 1933

KLA-TENCOR CORPORATION (Exact name of registrant as specified in its charter)

DELAWARE

04-2564110

(State of incorporation)

(I.R.S. Employer Identification No.)

160 RIO ROBLES

SAN JOSE, CALIFORNIA 95134

(408) 875-3000

(Address, including zip code, and telephone number, including area code, of registrant's principal executive offices)

LISA C. BERRY

VICE PRESIDENT AND GENERAL COUNSEL

KLA-TENCOR CORPORATION

160 RIO ROBLES

SAN JOSE, CALIFORNIA 95134

(408) 875-3000

(Name, address, including zip code, and telephone number, including area code, of agent for service)

> Copies to: LARRY W. SONSINI JUDITH M. O'BRIEN BRET M. DIMARCO WILSON SONSINI GOODRICH & ROSATI PROFESSIONAL CORPORATION 650 PAGE MILL ROAD PALO ALTO, CALIFORNIA 94304 (650) 493-9300

Approximate date of commencement of proposed sale to the public: FROM TIME TO TIME AFTER THE EFFECTIVE DATE OF THIS REGISTRATION STATEMENT.

If the only securities being registered on this Form are to be offered pursuant to dividend or interest reinvestment plans, please check the following box. []

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, other than securities offered only in connection with dividend or interest reinvestment plans, check the following box. [X]

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. []

If delivery of the prospectus is expected to be made pursuant to Rule 434, please check the following box. []

CALCULATION OF REGISTRATION FEE

<TABLE> <CAPTION>

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\$21,955

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(1) Estimated solely for the purpose of computing the registration fee required by Section 6(b) of the Securities Act and computed pursuant to Rule 457(c) under the Securities Act based upon the average of the high and low prices of the Common Stock on May 7, 1998 as reported on the Nasdaq National Market.

The registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

INFORMATION CONTAINED HEREIN IS SUBJECT TO COMPLETION OR AMENDMENT. A REGISTRATION STATEMENT RELATING TO THESE SECURITIES HAS BEEN FILED WITH THE SECURITIES AND EXCHANGE COMMISSION. THESE SECURITIES MAY NOT BE SOLD NOR MAY OFFERS TO BUY BE ACCEPTED PRIOR TO THE TIME THE REGISTRATION STATEMENT BECOMES EFFECTIVE. THIS PROSPECTUS SHALL NOT CONSTITUTE AN OFFER TO SELL OR THE SOLICITATION OF AN OFFER TO BUY NOR SHALL THERE BE ANY SALE OF THESE SECURITIES IN ANY STATE IN WHICH SUCH OFFER, SOLICITATION OR SALE WOULD BE UNLAWFUL PRIOR TO REGISTRATION OR QUALIFICATION UNDER THE SECURITIES LAWS OF ANY SUCH STATE.

PROSPECTUS (Subject to Completion) Issued May 12, 1998

1,800,000 SHARES

KLA-TENCOR CORPORATION COMMON STOCK

This Prospectus relates to the public offering, which is not being underwritten, of up to 1,800,000 shares of Common Stock, par value \$0.001 per share (the "Shares"), of KLA-Tencor Corporation ("KLA-Tencor" or the "Company"), which may be offered from time to time by certain stockholders of the Company or by pledgees, donees, transferees or other successors in interest that receive such shares as a gift, partnership distribution or other non-sale related transfer (the "Selling Stockholders"). The Company will receive no part of the proceeds of such sales. All of the Shares were originally issued by the Company in connection with the Company's acquisition of AMRay, Inc., a Delaware corporation ("AMRay"), by and through a merger of Alpine Acquisition, Inc., a wholly-owned subsidiary of KLA-Tencor ("Alpine"), with and into AMRay (the "Acquisition"). The Shares were issued pursuant to an exemption from the registration requirements of the Securities Act of 1933, as amended (the "Securities Act"), provided by Rule 506 of Regulation D thereunder. The Shares are being registered by the Company pursuant to a certain agreement among the Selling Stockholders and the Company.

The Shares may be offered by the Selling Stockholders from time to time in one or more transactions as described under "Plan of Distribution." To the extent required, the number of shares to be sold, the name of the Selling Stockholder(s), the purchase price, the name of any agent or broker-dealer, and any applicable commissions, discounts or other items constituting compensation to such agent or broker-dealer with respect to a particular offering will be set forth in a supplement or supplements to this Prospectus (each, a "Prospectus Supplement"). The aggregate proceeds to the Selling Stockholder(s) from the sale of the shares offered from time to time hereby will be the purchase price of the Shares sold less commissions, discounts and other compensation, if any, paid by the Selling Stockholder(s) to any agent or broker-dealer. The price at which any of the Shares may be sold, and the commissions, if any paid in connection with any such sale, are unknown and may vary from transaction to transaction. The Company will pay all expenses incident to the offering and sale of the Shares to the public other than any commissions, discounts and other compensation of underwriters, dealers or agents and any transfer taxes. See "Selling Stockholders" and "Plan of Distribution."

The Company's Common Stock is listed on the Nasdaq National Market under the symbol "KLAC." On May 8, 1998, the last sale price of the Company's Common

THIS OFFERING INVOLVES A HIGH DEGREE OF RISK. SEE "RISK FACTORS" COMMENCING ON PAGE 4 HEREOF.

The Securities and Exchange Commission may take the view that, under certain circumstances, the Selling Stockholders and any broker-dealers or agents that participate with the Selling Stockholders in the distribution of the Shares may be deemed to be "underwriters" within the meaning of the Securities Act. Commissions, discounts or concessions received by any such broker-dealer or agent may be deemed to be underwriting commissions under the Securities Act. The Company and the Selling Stockholders have agreed to certain indemnification arrangements. See "Plan of Distribution."

THESE SECURITIES HAVE NOT BEEN APPROVED OR DISAPPROVED BY THE SECURITIES

AND EXCHANGE COMMISSION OR ANY STATE SECURITIES COMMISSION NOR HAS

THE SECURITIES AND EXCHANGE COMMISSION OR ANY STATE SECURITIES

COMMISSION PASSED UPON THE ACCURACY OR ADEQUACY OF

THIS PROSPECTUS. ANY REPRESENTATION TO THE

CONTRARY IS A CRIMINAL OFFENSE.

THE DATE OF THIS PROSPECTUS IS MAY 12, 1998

AVAILABLE INFORMATION

The Company is subject to the informational requirements of the Securities Exchange Act of 1934, as amended (the "Exchange Act"), and in accordance therewith files reports, proxy and information statements and other information with the Securities and Exchange Commission (the "Commission"). Such reports, proxy and information statements and other information filed by the Company can be inspected and copied at the public reference facilities maintained by the Commission at Room 1024, Judiciary Plaza, 450 Fifth Street, N.W., Washington, D.C. 20549, and at the following Regional Offices of the Commission: Northeast Regional Office, Seven World Trade Center, Suite 1300, New York, New York 10048 and Midwest Regional Office, Northwest Atrium Center, 500 West Madison Street, Suite 1400, Chicago, Illinois 60661. Copies of such material can be obtained from the Public Reference Section of the Commission at Judiciary Plaza, 450 Fifth Street, N.W., Washington, D.C. 20549 at prescribed rates. The Commission maintains a web site that contains reports, proxy and information statements and other information regarding registrants that file electronically with the Commission. The address of the Commission's web site is http://www.sec.gov. The Common Stock of the Company is listed on the Nasdaq National Market, and such reports, proxy and information statements and other information concerning the Company may be inspected at the offices of Nasdaq Operations, 1735 K Street, N.W., Washington, D.C. 20006-1506.

This Prospectus constitutes a part of a Registration Statement on Form S-3 (herein, together with all amendments and exhibits, referred to as the "Registration Statement") filed by the Company with the Commission under the Securities Act. This Prospectus does not contain all of the information set forth in the Registration Statement, certain parts of which are omitted in accordance with the rules and regulations of the Commission. For further information with respect to the Company and the Shares offered hereby, reference is hereby made to the Registration Statement. The Registration Statement may be inspected at the public reference facilities maintained by the Commission at the addresses set forth in the preceding paragraph. The Company has filed the Registration Statement electronically with the Commission via the Commission's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system. Statements contained herein concerning any document filed as an exhibit are not necessarily complete and, in each instance, reference is made to the copy of such document filed as an exhibit to the Registration Statement. Each such statement is qualified in its entirety by such reference. The Company intends to distribute to its stockholders annual reports containing audited financial statements and will make available copies of quarterly reports for the first three quarters of each fiscal year containing unaudited interim financial information.

INCORPORATION OF CERTAIN DOCUMENTS BY REFERENCE

The following documents filed with the Commission are hereby incorporated by reference in this Prospectus:

(1) The Company's Annual Report on Form 10-K for the fiscal year ended June 30, 1997 (File No. 000-09992);

- (2) The Company's Quarterly Reports on Form 10-Q for the quarters ended March 31, 1998, December 31, 1997 and September 30, 1997 (File No. 000-09992):
- (3) All other documents filed by the Company pursuant to Section 13(a) or 15(d) of the Exchange Act since the end of the fiscal year covered by the annual report referred to in (1) above; and
- (4) The description of the Registrant's Common Stock as set forth in the Registration Statement filed by the Registrant on Form 8-A on March 29, 1989 (File No. 000-09992) pursuant to Section 12(g) of the Exchange Act and any amendments or reports thereto filed with the Securities and Exchange Commission for the purpose of updating such

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description including Amendment No. 1 to Form 8-A filed September 25, 1995 and Amendment No. 2 to Form 8-A filed September 24, 1996.

All reports and other documents subsequently filed by the Company pursuant to Section 13(a), 13(c), 14 or 15(d) of the Exchange Act after the date of this Prospectus and prior to the termination of this offering shall be deemed to be incorporated by reference into this Prospectus, to the extent required, and to be a part of this Prospectus from the date of filing of such reports and documents.

Any statement contained in a document incorporated by reference into this Prospectus shall be deemed to be modified or superseded for purposes of this Prospectus to the extent that a statement contained herein or in any other subsequently filed document that also is or is deemed to be incorporated by reference herein modifies or supersedes such statement. Any statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Prospectus.

The Company hereby undertakes to provide without charge to each person, including any beneficial owner, to whom a copy of this Prospectus is delivered, upon written or oral request of such person, a copy of any or all of the information that has been incorporated by reference in this Prospectus (other than exhibits to such documents, unless such exhibits are specifically incorporated by reference into the information that this Prospectus incorporates). Requests for such documents should be submitted in writing to Investor Relations, KLA-Tencor Corporation, 160 Rio Robles, San Jose, California 95134 or by telephone at (408) 875-3000.

THE COMPANY

KLA-Tencor Corporation ("KLA-Tencor" or the "Company") is a leader in the design, manufacture, marketing and service of yield management and process monitoring systems for the semiconductor industry. The Company uses its technical expertise and understanding of customer needs to supply unique yield management solutions. In addition, the Company has one of the broadest lines of wafer inspection, thin film measurement, metrology and reticle inspection systems available in the semiconductor industry. The Company's systems are used to analyze product and process quality at critical steps in the manufacturing process for integrated circuits and to provide feedback to the Company's customers in order that fabrication problems can be identified, addressed and contained. This understanding of defect sources and how to contain them enables semiconductor manufacturers to increase yields. Increasing yields is important because semiconductor fabrication facilities are increasingly expensive to build and equip. Yield management and process monitoring systems, which typically represent a small percentage of the total investment required to build and equip a fabrication facility, enable integrated circuit manufacturers to leverage these expensive facilities and improve their returns on investment. Marketing and selling its products worldwide to virtually all of the major semiconductor manufacturers, the Company derives revenues primarily from product sales, principally through its direct sales force and, to a lesser extent, through distributors.

The Company was incorporated in Delaware in July 1975. Its headquarters is located at 160 Rio Robles, San Jose, California, 95134, telephone (408) 875-3000.

FORWARD-LOOKING STATEMENTS

This Prospectus includes or incorporates by reference forward-looking statements that involve risks and uncertainties. The statements contained or incorporated by reference in this Prospectus that are not purely historical are forward-looking statements within the meaning of Section 27A of the Securities Act and Section 21E of the Exchange Act. Words such as "anticipates," "expects," "intends," "plans," "believes," "seeks," "estimates" and variations of such words and similar expressions are intended to identify such forward-looking statements. These statements are not guarantees of future performance and are subject to certain risks, uncertainties and assumptions that are difficult to predict; therefore, actual results may differ materially from those expressed or forecasted in any such forward-looking statements. Such forward-looking statements are based on current expectations, estimates and projections about the Company's industry, management's beliefs, and assumptions made by management.

RISK FACTORS

The Shares offered hereby are speculative in nature and involve a high degree of risk. In addition to risk factors contained herein, the risk factors and other information contained in the Company's Annual Report on Form 10-K for the fiscal year ended June 30, 1997 are incorporated by reference herein. See "Incorporation of Certain Documents by Reference." More specifically, risk factors can be found referenced in the Company's Annual Report on Form 10-K for the fiscal year ended June 30, 1997 under "Management's Discussion and Analysis of Financial Condition and Results of Operations—Other Factors Affecting Company Results. Such risk factors and other information should be considered carefully before purchasing the offered Shares. Unless required by law, the Company undertakes no obligation to update publicly any forward—looking statements, whether as a result of new information, future events or otherwise. Investors should carefully review the risk factors and other information set forth in the reports and other documents the Company files from time to time with the Commission.

The Company's quarterly operating results have fluctuated in the past and may fluctuate in the future. During the last three months results have been adversely affected as the Company experienced declines in revenues and margins during this period due to the semiconductor industry's reaction to the Asian financial crisis, low DRAM pricing and DRAM overcapacity. The Company's operating results are dependent on many factors, including the economic conditions in the semiconductor and related industries, both in the US and abroad, the size and timing of the receipt of orders from customers, customer cancellations or delays of shipments, the Company's ability to develop, introduce, and market new and enhanced products on a timely basis, among others. The Company has experienced reductions in orders, cancellations and delays in shipments which may continue to adversely affect sales and margins in future periods. The Company expects unfavorable effects on orders, sales and margins to persist at least through the remainder of the fiscal year and possibly beyond. The Company's expense levels are based, in part, on expectations of future revenues. If revenue levels in a particular period do not meet expectations of increased revenues, operating results will be adversely affected.

The Company's business depends and will continue to depend in the future upon the capital equipment expenditures of semiconductor manufacturers, which in turn depend on the current and anticipated market demand for integrated circuits and products utilizing integrated circuits. The current industry downturn has had an adverse effect on the semiconductor industry's level of capital expenditures. The Company believes that it is relatively well positioned for this downturn because of its array of products, its focus on yield improvement and process development rather than pure capacity, its sales of metrology products to non-semiconductor industries and its strong balance sheet.

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Nevertheless, there can be no assurance that the Company's current position will be able to withstand the effects of a industry downturn.

Rapid technological changes in semiconductor manufacturing processes subject the semiconductor manufacturing equipment industry to increased pressure to maintain technological parity with deep submicron process technology. While focused on controlling expenses to address the downturn in the semiconductor industry, the Company continues to believe that its future success will depend in part upon its ability to develop, manufacture and successfully introduce new products with improved capabilities including those for 300mm wafers and devices with critical dimensions at .25-micron and below and to continue to enhance existing products. Due to the risks inherent in transitioning to new products, the Company will be required to forecast demand for new products while managing the transition from older products. There can be no assurance that the Company will successfully and timely develop and manufacture new hardware and software products or that new hardware and software products introduced by the Company

will be accepted in the marketplace. If new products have reliability or quality problems then reduced orders, higher manufacturing costs, delays in collecting accounts receivable and additional service and warranty expense may result. Additionally, there can be no assurance that future technologies, processes or product developments will not render the Company's current product offerings obsolete. However, if the Company does not continue to successfully introduce new products, its results of operations will be adversely affected. The Company expects to continue to make significant investments in research and development and to sustain its current spending levels for customer support in fiscal year 1998 to meet current customer requirements and effectively position the Company for growth when the business cycle turns favorable.

The semiconductor equipment industry is highly competitive. The Company has experienced and expects to continue to face substantial competition throughout the world. The Company believes that to remain competitive, it will require significant financial resources in order to offer a broad range of products, to maintain customer service and support centers worldwide, and to invest in product and process research and development. The Company believes that the semiconductor equipment industry is becoming increasingly dominated by large manufacturers, who have the resources to support customers on a worldwide basis. Many of these competitors have substantially greater financial resources and more extensive engineering, manufacturing, marketing and customer service and support capabilities than the Company. In addition, there are smaller emerging semiconductor equipment companies which provide innovative technology. No assurance can be given that the Company will be able to compete successfully worldwide.

The Company expects that international revenues will continue to represent a significant percentage of its net revenues. International revenues and operations may be adversely affected by imposition of governmental controls, restrictions on export technology, political instability, trade restrictions, changes in tariffs and the difficulties associated with staffing and managing international operations. In addition, international sales may be adversely affected by economic conditions in each country. The future performance of the Company will be dependent, in part, upon its ability to continue to compete successfully in Asia, one of the largest areas for the sale of yield management and process monitoring equipment. Countries in the Asia Pacific region, including Japan, Korea and Taiwan, have experienced weaknesses in their currency, banking and equity markets in recent periods. These weaknesses may continue to adversely affect demand for the Company's products, the U.S. dollar value of the Company's foreign currency denominated sales, the availability and supply of resources, and the Company's consolidated results of operations. Although the Company attempts to manage near term currency risks through "hedging," there can be no assurance that such efforts will be adequate. These factors may have a material adverse effect on the Company's future business and financial results.

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SELECTED FINANCIAL DATA

Five Year Financial Highlights (in thousands, except per share data)

<TABLE>

THREE MONTHS

ENDED

YEAR ENDED JUNE 30,

MARCH 31,					
	1993	1994	1995	1996	1997
1998					
<\$>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>
<c></c>					
Revenues	\$ 261,105	\$ 376,454	\$ 695 , 950	\$1,094,492	\$1,031,824
Net income \$ 28,971(3)	\$ 11 , 507	\$ 40,443	\$ 104,811(1)	\$ 196,634	\$ 105,396(2)
Net income per share(4)					
Basic\$ 0.34(3)	\$ 0.22	\$ 0.61	\$ 1.40(1)	\$ 2.42	\$ 1.29(2)
Diluted	\$ 0.19	\$ 0.59	\$ 1.34(1)	\$ 2.34	\$ 1.24(2)

Shares used in per share

calculation(4)					
Basic	51 , 968	66,316	74,758	81,148	81,943
84,985					
Diluted	60,841	69 , 076	78,427	84,195	85 , 203
87,785					

 | | | | |<TABLE>

AS OF

AS OF JUNE 30,

MARCI	$\supset \perp$,

	1993	1994	1995	1996	1997
1998					
<s></s>	<c></c>	<c></c>	<c></c>	<c></c>	<c></c>
<c></c>					
Cash, cash equivalents and					
marketable securities	\$ 70,044	\$ 174,305	\$ 385,040	\$ 468,475	\$ 687,249
\$ 714,567					
Working capital	\$ 133,084	\$ 277 , 791	\$ 452,350	\$ 591,397	\$ 535 , 256
\$ 551,723					
Total assets	\$ 260,485	\$ 430,453	\$ 850,406	\$1,157,919	\$1,343,307
\$1,504,839					
Stockholders' equity	\$ 165 , 379	\$ 307,334	\$ 652 , 222	\$ 870 , 999	\$1,014,613
\$1,174,634					

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- (1) Includes a net charge of \$16.2 million for write-off of acquired in-process technology. Net income, basic and diluted net income per share would have been \$121 million, \$1.62 and \$1.54, respectively, excluding this charge.
- (2) Includes merger, restructuring and other costs of \$60.6 million. Net income, basic and diluted net income per share would have been \$151.3 million, \$1.85 and \$1.78, respectively, excluding these costs.
- (3) Includes non-recurring acquisition and restructuring charges of \$3.1 million. Net income, basic and diluted net income per share would have been \$31.1 million, \$0.37 and \$0.35, respectively, excluding these costs.
- (4) The Company adopted Statement of Accounting Standards No. 128 ("FAS 128") "Earnings Per Share." FAS 128 requires presentation of both basic and diluted net income per share on the income statement for all periods presented. Basic net income per share is computed by dividing net income available to common stockholders by the weighted average number of common shares outstanding during the period. In computing diluted net income per share, the average stock price for the period is used in determining the number of shares assumed to be purchased from the exercise of stock options. Diluted net income per share is computed using the weighted average number of common and potential common stock equivalent shares outstanding during the period.

USE OF PROCEEDS

The Company will not receive any of the proceeds from the sale of the Shares. All proceeds from the sale of the Shares will be for the account of the Selling Stockholders, as described below. See "Selling Stockholders" and "Plan of Distribution."

SELLING STOCKHOLDERS

The following table sets forth, as of the date of this Prospectus, the name of each of the Selling Stockholders, the number of Shares that each such Selling Stockholder owns as of such date, the number of Shares owned by each Selling Stockholder that may be offered for sale from time to time by this Prospectus, and the number of Shares to be held by each such Selling Stockholder assuming the sale of all of the Shares offered hereby. Except as indicated, none of the Selling Stockholders has held any position or office or had a material relationship with the Company or any of its predecessors or affiliates within the past three years other than as a result of the ownership of the Company's Common

Stock. The Company may amend or supplement this Prospectus from time to time to update the disclosure set forth herein.

<TABLE> <CAPTION>

<caption></caption>	SHARES	SHARES WHICH MAY BE SOLD	AFTER OF	CICIALLY OWNED
SELLING STOCKHOLDER(1)	BENEFICIALLY OWNED(2)			
<pre><s></s></pre>	<c></c>		<c></c>	<c></c>
Gerald T. Cameron, Sr.	80,547	80,547	0	0
Alice J. Cameron	80,547	80,547	0	0
Gerald T. Cameron, Jr.	249,100	249,100	0	0
Cynthia W. Cameron	8,017	8,017	0	0
Gerald T. Cameron, Jr.				
as Cust. For Meredith L. Cameron Gerald T. Cameron, Jr.	8,017	8,017	0	0
as Cust. For Caroline L. Cameron	8,017	8,017	0	0
Brian L. Cameron	249,100	249,100	0	0
Doris R. Cameron	8,017	8,017	0	0
Brian L. Cameron	•, •= ·	,,,,,	-	-
as Cust. For Stephen M. Cameron Brian L. Cameron	8,017	8,017	0	0
as Cust. For Christine N. Cameron	8,017	8,017	0	0
Gregory R. Cameron	233,066	233,066	0	0
Sharon M. Cameron	8,017	8,017	0	0
Gregory R. Cameron	0,017	0,017	V	O
as Cust. For Courtney S. Cameron Gregory R. Cameron	8,017	8,017	0	0
as Cust. For Kristen M. Cameron	8,017	8,017	0	0
Gregory R. Cameron as Cust. For Jennifer A. Cameron	8,017	8,017	0	0
Gregory R. Cameron as Cust. For Melissa J. Cameron	8,017	8,017	0	0
Janias C. Coody	241 002	241,083	0	0
Janice C. Coady Edward P. Coady	241,083 8,017	8,017	0	0
Janice C. Coady				-
as Cust. For Cameron P. Coady Janice C. Coady	8,017	8,017	0	0
as Cust. For Christopher J. Coady Janice C. Coady	8,017	8,017	0	0
as Cust. For Connor E. Coady	8,017	8,017	0	0
Regina C. Fuertes	257,117	257,117	0	0
Felix R. Fuertes	8,017	8,017	0	0
Regina C. Fuertes	., .			
as Cust. For Francesca I. Fuertes	8,017	8,017	0	0
Paula M. Swain	241,083	241,083	0	0
Bernard L. Swain	8,017	8,017	0	0
Paula M. Swain	•	•		
as Cust. For Timothy D. Swain Paula M. Swain	8,017	8,017	0	0
as Cust. For Michael P. Swain Paula M. Swain	8,017	8,017	0	0
as Cust. For Kelley P. Swain	8,017	8,017	0	0
TOTAL				

 1,800,000 | 1,800,000 | 0 | 0 |- -----

⁽¹⁾ Each Selling Stockholder is subject to an affiliate agreement whereby such Stockholder may not transfer, dispose of or enter into any other transaction (through derivatives or otherwise) intended to reduce or having the effect of reducing, directly or indirectly, such stockholder's risk relative to, any shares of the Common Stock until such time as financial results covering at least 30 days of the combined operations of KLA-Tencor and AMRay have been published by KLA-Tencor in an Annual Report on Form 10-K, a Quarterly Report on Form 10-Q, a Current Report on Form 8-K, a quarterly earnings report, a press release or other public issuance that includes combined sales and net income of AMRay and KLA-Tencor. KLA-Tencor does not expect to publish such combined financial information prior to the filing of the Annual Report on Form 10-K for the fiscal year ending June 30, 1998, which is required to be filed on or before September 28, 1998.

- (2) The number and percentage of shares beneficially owned is determined in accordance with Rule 13d-3 of the Exchange Act, and the information is not necessarily indicative of beneficial ownership for any other purpose. Under such rule, beneficial ownership includes any shares as to which the individual has sole or shared voting power or investment power and also any shares which the individual has the right to acquire within 60 days of the date of this Prospectus through the exercise of any stock option or other right. Unless otherwise indicated in the footnotes, each person has sole voting and investment power (or shares such powers with his or her spouse) with respect to the shares shown as beneficially owned.
- (3) The number and percentage of shares beneficially owned includes an aggregate of 105,000 shares of Common Stock beneficially owned by the Selling Stockholders that have been deposited into escrow pursuant to that certain Agreement and Plan of Reorganization dated March 16, 1998 to secure the respective indemnification obligations of the Selling Stockholders thereunder (the "Escrowed Shares"). To the extent that no claims have been made against the escrow, the Escrowed Shares will be released from escrow as follows: 75,000 Escrowed Shares shall be released no later than April 8, 1999, and the remaining 30,000 Escrowed Shares no later than April 8, 2001. In addition, it is anticipated that up to 30,000 Escrowed Shares may be sold prior to the termination of the escrow period, with the proceeds deposited into escrow for the applicable period.
- (4) Assumes the sale of all Shares offered hereby, including the Escrowed Shares, if any.

PLAN OF DISTRIBUTION

The Shares covered by this Prospectus may be offered and sold from time to time by the Selling Stockholders. The Selling Stockholders will act independently of the Company in making decisions with respect to the timing, manner and size of each sale. The Selling Stockholders may sell the Shares being offered hereby on the Nasdaq National Market, or otherwise, at prices and under terms then prevailing or at prices related to the then current market price or at negotiated prices. The Shares may be sold by one or more of the following means of distribution: (a) a block trade in which the broker-dealer so engaged will attempt to sell Shares as agent, but may position and resell a portion of the block as principal to facilitate the transaction; (b) purchases by a broker-dealer as principal and resale by such broker-dealer for its own account pursuant to this Prospectus; (c) an over-the-counter distribution in accordance with the rules of the Nasdaq National Market; (d) ordinary brokerage transactions and transactions in which the broker solicits purchasers; and (e) in privately negotiated transactions. To the extent required, this Prospectus may be amended and supplemented from time to time to describe a specific plan of distribution. In connection with distributions of the Shares or otherwise, the Selling Stockholders may enter into hedging transactions with broker-dealers or other financial institutions. In connection with such transactions, broker-dealers or other financial institutions may engage in short sales of the Company's Common Stock in the course of hedging the positions they assume with Selling Stockholders. The Selling Stockholders may also sell the Company's Common Stock short and redeliver the Shares to close out such short positions. The Selling Stockholders may also enter into option or other transactions with broker-dealers or other financial institutions which require the delivery to such

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broker-dealer or other financial institution of Shares offered hereby, which Shares such broker-dealer or other financial institution may resell pursuant to this Prospectus (as supplemented or amended to reflect such transaction). The Selling Stockholders may also pledge Shares to a broker-dealer or other financial institution, and, upon a default, such broker-dealer or other financial institution, may effect sales of the pledged Shares pursuant to this Prospectus (as supplemented or amended to reflect such transaction). In addition, any Shares that qualify for sale pursuant to Rule 144 may be sold under Rule 144 rather than pursuant to this Prospectus.

In effecting sales, brokers, dealers or agents engaged by the Selling Stockholders may arrange for other brokers or dealers to participate. Brokers, dealers or agents may receive commissions, discounts or concessions from the Selling Stockholders in amounts to be negotiated prior to the sale. Such brokers or dealers and any other participating brokers or dealers may be deemed to be "underwriters" within the meaning of the Securities Act in connection with such sales, and any such commissions, discounts or concessions may be deemed to be underwriting discounts or commissions under the Securities Act. The Company will pay all expenses incident to the offering and sale of the Shares to the public other than any commissions and discounts of underwriters, dealers or agents and

any transfer taxes.

In order to comply with the securities laws of certain states, if applicable, the Shares must be sold in such jurisdictions only through registered or licensed brokers or dealers. In addition, in certain states the Shares may not be sold unless they have been registered or qualified for sale in the applicable state or an exemption from the registration or qualification requirement is available and is complied with.

The Company has advised the Selling Stockholders that the anti-manipulation rules of Regulation M under the Exchange Act may apply to sales of Shares in the market and to the activities of the Selling Stockholders and their affiliates. In addition, the Company will make copies of this Prospectus available to the Selling Stockholders and has informed them of the need for delivery of copies of this Prospectus to purchasers at or prior to the time of any sale of the Shares offered hereby. The Selling Stockholders may indemnify any broker-dealer that participates in transactions involving the sale of the Shares against certain liabilities, including liabilities arising under the Securities Act.

At the time a particular offer of Shares is made, if required, a Prospectus Supplement will be distributed that will set forth the number of Shares being offered and the terms of the offering, including the name of any underwriter, dealer or agent, the purchase price paid by any underwriter, any discount, commission and other item constituting compensation, any discount, commission or concession allowed or reallowed or paid to any dealer, and the proposed selling price to the public.

The sale of Shares is subject to compliance by the Selling Stockholders with certain contractual restrictions with the Company. There can be no assurance that the Selling Stockholders will sell all or any of the Shares.

The Company has agreed with the Selling Stockholders to use commercially reasonable efforts to keep the Registration Statement of which this Prospectus constitutes a part effective for up to twelve months following the effectiveness of such Registration Statement. The Company intends to remove from registration any of the Shares not sold by the Selling Stockholders at the end of such twelve month period; however, it is anticipated that at such time any unsold shares may be freely tradable subject to compliance with Rule 144 of the Securities Act.

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LEGAL MATTERS

The validity of the Shares offered hereby will be passed upon by Wilson Sonsini Goodrich & Rosati, Professional Corporation, Palo Alto, California, counsel to the Company.

EXPERTS

The consolidated financial statements in this Prospectus incorporated by reference to the Company's Annual Report on Form 10-K for the year ended June 30, 1997, have been so incorporated in reliance on the report of Price Waterhouse LLP, independent accountants, given on the authority of said firm as experts in auditing and accounting.

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NO PERSON IS AUTHORIZED IN CONNECTION WITH ANY OFFERING MADE BY THIS PROSPECTUS TO GIVE ANY INFORMATION OR TO MAKE ANY REPRESENTATIONS NOT CONTAINED IN THIS PROSPECTUS, AND, IF GIVEN OR MADE, SUCH INFORMATION OR REPRESENTATIONS MUST NOT BE RELIED UPON AS HAVING BEEN AUTHORIZED BY THE COMPANY, ANY SELLING STOCKHOLDER OR BY ANY OTHER PERSON. THIS PROSPECTUS DOES NOT CONSTITUTE AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY ANY SECURITY OTHER THAN THE SHARES OFFERED HEREBY, NOR DOES IT CONSTITUTE AN OFFER TO SELL OR A SOLICITATION OF AN OFFER TO BUY ANY OF THE SHARES OFFERED HEREBY TO ANY PERSON IN ANY JURISDICTION IN WHICH IT IS UNLAWFUL TO MAKE SUCH AN OFFER OR SOLICITATION. NEITHER THE DELIVERY OF THIS PROSPECTUS NOR ANY SALE OF OR OFFER TO SELL THE SHARES MADE HEREUNDER SHALL UNDER ANY CIRCUMSTANCES CREATE ANY IMPLICATION THAT THERE HAS BEEN NO CHANGE IN THE AFFAIRS OF THE COMPANY SINCE THE DATE HEREOF OR THAT THE INFORMATION CONTAINED HEREIN IS CORRECT AS OF ANY TIME SUBSEQUENT TO THE DATE HEREOF.

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KLA-TENCOR CORPORATION

1,800,000 SHARES

OF

COMMON STOCK

PROSPECTUS

May 12, 1998

PART II

INFORMATION NOT REQUIRED IN THE PROSPECTUS

ITEM 14. OTHER EXPENSES OF ISSUANCE AND DISTRIBUTION.

The Company will pay all expenses incident to the offering and sale to the public of the shares being registered other than any commissions and discounts of underwriters, dealers or agents and any transfer taxes. Such expenses are set forth in the following table. All of the amounts shown are estimates except the Securities and Exchange Commission ("SEC") registration fee and the Nasdaq National Market listing fee.

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	SEC registration fee	\$21 , 955
	NASDAQ National Market listing fee	17,500
	Legal fees and expenses	10,000
	Accounting fees and expenses	10,000
	Miscellaneous expenses	20,000
	Total	\$79 , 455
<td>></td> <td></td>	>	

ITEM 15. INDEMNIFICATION OF DIRECTORS AND OFFICERS.

Section 145(a) of the Delaware General Corporation Law (the "DGCL") provides in relevant part that "[a] corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action, suit or proceeding, whether civil, criminal, administrative or investigative (other than an action by or in the right of the corporation) by reason of the fact that he is or was a director, officer, employee or agent of the corporation, or is or was serving at the request of the

corporation as a director, officer, employee or agent of another corporation, partnership, joint venture, trust or other enterprise, against expenses (including attorneys' fees), judgments, fines and amounts paid in settlement actually and reasonably incurred by him in connection with such action, suit or proceeding if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation, and, with respect to any criminal action or proceeding, had no reasonable cause to believe his conduct was unlawful." With respect to derivative actions, Section 145(b) of the DGCL provides in relevant part that "[a] corporation may indemnify any person who was or is a party or is threatened to be made a party to any threatened, pending or completed action or suit by or in the right of the corporation to procure a judgment in its favor. . . [by reason of his service in one of the capacities specified in the preceding sentence] against expenses (including attorneys' fees) actually and reasonably incurred by him in connection with the defense or settlement of such action or suit if he acted in good faith and in a manner he reasonably believed to be in or not opposed to the best interests of the corporation and except that no indemnification shall be made in respect of any claim, issue or matter as to which such person shall have been adjudged to be liable to the corporation unless and only to the extent that the Court of Chancery or the court in which such action or suit was brought shall determine upon application that, despite the adjudication of liability but in view of all the circumstances of the case, such person is fairly and reasonably entitled to indemnity for such expenses which the Court of Chancery or such other court shall deem proper."

The Company's Amended and Restated Certificate of Incorporation provides that, to the fullest extent permitted by the DGCL, no director of the Company shall be personally liable to the Company or its stockholders for monetary damages for breach of fiduciary duty as a director. The Amended and Restated Certificate of Incorporation also provides that no amendment or repeal of such

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provision shall apply to or have any effect on the right to indemnification permitted thereunder with respect to claims arising from acts or omissions occurring in whole or in part before the effective date of such amendment or repeal whether asserted before or after such amendment or repeal.

The Company's Bylaws provide that the Company shall indemnify to the full extent permitted by the DGCL each of its directors, officers, employees and other agents against expenses actually and reasonably incurred in connection with any proceeding arising by reason of the fact that such person is or was an agent of the Company.

The Company has entered into indemnification agreements with its directors and executive officers and intends to enter into indemnification agreements with any new directors and executive officers in the future.

ITEM 16. EXHIBITS.

Exhibit No.

- -----

- 5.1 Opinion of Wilson Sonsini Goodrich & Rosati, Professional Corporation.
- 23.1 Consent of Price Waterhouse LLP.
- 23.2 Consent of Counsel (included in Exhibit 5.1).
- 24.1 Power of Attorney (included on page II-4).
- 27.1 Restated Financial Data Schedule.
- 27.2 Restated Financial Data Schedule.
- 27.3 Restated Financial Data Schedule.

ITEM 17. UNDERTAKINGS.

(a). UNDERTAKING PURSUANT TO RULE 415 OFFERING.

The undersigned registrant hereby undertakes:

- (1) To file, during any period in which offers or sales are being made, a post-effective amendment to this Registration Statement to include any material information with respect to the plan of distribution not previously disclosed in the registration statement or any material change to such information in the registration statement.
- (2) That, for the purpose of determining any liability under the Securities Act of 1933, each such post-effective amendment shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.
 - (3) To remove from registration by means of a post-effective

amendment any of the securities being registered which remain unsold at the termination of the offering.

The undersigned registrant hereby undertakes that, for purposes of determining any liability under the Securities Act of 1933, each filing of the registrant's annual report pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934 (and, where applicable, each filing of an employee benefit plan's annual report pursuant to Section 15(d) of the Securities Exchange Act of 1934) that is incorporated by reference in the Registration Statement shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the registrant pursuant to the foregoing provisions or otherwise, the registrant has been advised that in the opinion of the Securities Exchange Commission such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Securities Act of 1933 and will be governed by the final adjudication of such issue.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant certifies that it has reasonable grounds to believe that it meets all of the requirements for filing on Form S-3 and has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the City of San Jose, State of California, on this May 11, 1998.

KLA-TENCOR CORPORATION

Kenneth Levy, Chairman of the Board

POWER OF ATTORNEY

KNOW ALL PERSONS BY THESE PRESENTS, that each person whose signature appears below constitutes and appoints Kenneth Levy and Lisa C. Berry, and each of them, their true and lawful attorneys and agents, with full power of substitution, each with power to act alone, to sign and execute on behalf of the undersigned any amendment or amendments to this Registration Statement on Form S-3 and to perform any acts necessary in order to file such amendments, and each of the undersigned does hereby ratify and confirm all that said attorneys and agents, or their or his or her substitutes, shall do or cause to be done by virtue hereof. Pursuant to the requirements of the Securities Act of 1933, as amended, this Registration Statement has been signed by the following persons in the capacities and on the dates indicated.

<TABLE> <CAPTION> Title Signature Date <C> <S> <C> /s/ May 11, 1998 - -----Chairman of the Board and Director Kenneth Levy

Chief Executive Officer and Director _ _____ (Principal Executive Officer)

May 11, 1998

/s/

/s/	President, Chief Operating Officer and	May 11, 1998
Kenneth L. Schroeder	Director	
/s/ 	Executive Vice President, and Chief Financial Officer (Principal Financial and Accounting Officer)	May 11, 1998
/s/ James W. Bagley	Director	May 11, 1998
/s/Edward W. Barnholt	Director	May 11, 1998
/s/ Leo J. Chamberlain	Director	May 11, 1998
/s/ Richard J. Elkus, Jr. 		

 Director | May 11, 1998 || | II-4 | |
	Title Director	Date May 11, 1998
/s/	Director	May 11, 1998
Yoshio Nishi		
/s/	Director	May 11, 1998
/s/ Dag Tellefsen	Director	May 11, 1998
/s/ Lida Urbanek	Director	May 11, 1998
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INDEX TO EXHIBITS

<TABLE> <CAPTION> Exhibit Number Description 1 . . . - -----<C>
Opinion of Wilson Sonsini Goodrich & Rosati, Professional

5.1

Corporation. 23.1 Consent of Price Waterhouse LLP. 23.2 Consent of Counsel (included in Exhibit 5.1). 24.1 Power of Attorney (included on page II-4). 27.1 Restated Financial Data Schedule. 27.2 Restated Financial Data Schedule. 27.3 Restated Financial Data Schedule.

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May 11, 1998

KLA-Tencor Corporation 160 Rio Robles San Jose, CA 95134

RE: REGISTRATION STATEMENT ON FORM S-3

Ladies and Gentlemen:

We have examined the Registration Statement on Form S-3 to be filed by you with the Securities and Exchange Commission on or about the date hereof (the "Registration Statement") in connection with the registration under the Securities Act of 1933, as amended, of up to 1,800,000 shares of your Common Stock (the "Shares"). All of the Shares are issued and outstanding and may be offered for sale for the benefit of the selling stockholders named in the Registration Statement. We understand that the Shares are to be sold from time to time on the Nasdag National Market at prevailing prices or as otherwise described in the Registration Statement. As your legal counsel, we have also examined the proceedings taken by you in connection with the issuance of the Shares. We assume that the consideration received by you in connection with each issuance of Shares will include an amount in the form of cash, services rendered or property that exceeds the greater of (i) the aggregate par value of such Shares or (ii) the portion of such consideration determined by the Company's Board of Directors to be "capital" for purposes of the Delaware General Corporation Law.

Subject to the foregoing, we are of the opinion that the Shares are validly issued, fully paid and non-assessable.

We consent to the use of this opinion as an exhibit to the Registration Statement and further consent to the use of our name wherever appearing in the Registration Statement, including the Prospectus constituting a part thereof, and any amendments thereto.

Very truly yours,

WILSON SONSINI GOODRICH & ROSATI Professional Corporation

/s/ WILSON SONSINI GOODRICH & ROSATI

CONSENT OF INDEPENDENT ACCOUNTANTS

We hereby consent to the incorporation by reference in the Prospectus constituting part of this Registration Statement on Form S-3 of our report dated July 28, 1997, which appears on page 30 of the 1997 Annual Report to Stockolders of KLA-Tencor Corporation, which is incorporated by reference in KLA-Tencor's Annual Report on Form 10-K for the year ended June 30, 1997. We also consent to the reference to us under the heading "Experts" in such Prospectus.

Price Waterhouse LLP San Jose, California May 8, 1998

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