

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

FORM S-8

**REGISTRATION STATEMENT
Under
The Securities Act of 1933**

ELECTRO-OPTICAL SCIENCES, INC.

(Exact Name of Registrant as Specified in its Charter)

Delaware
(State or Other Jurisdiction of Incorporation or
Organization)

13-3986004
(IRS Employer Identification No.)

**3 West Man Street, Suite 201
Irvington, New York 10533**
(Address of Principal Executive Offices) (Zip Code)

2005 STOCK INCENTIVE PLAN
(Full Title of the Plan)

Joseph V. Gulfo, M.D.
President and Chief Executive Officer
Electro-Optical Sciences, Inc.
3 West Main Street, Suite 201
Irvington, New York 10533
(Name and Address of Agent for Service)

(914) 591-3783
(Telephone Number, Including Area Code, of Agent for Service)

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

Large accelerated filer Accelerated filer Non-accelerated filer Smaller reporting company
(Do not check if a smaller reporting company)

CALCULATION OF REGISTRATION FEE

Title of Securities to be Registered	Amount to be Registered (1)	Proposed Maximum Offering Price per Share	Proposed Maximum Aggregate Offering Price	Amount of Registration Fee
Common Stock, \$0.001 par value	2,224,028	\$7.09 (2)	\$15,768,358.52	\$879.87

- Pursuant to Rule 416 under the Securities Act of 1933, this Registration Statement also covers any additional shares of the Registrant's Common Stock that becomes issuable under the 2005 Stock Incentive Plan by reason of any stock dividend, stock split, recapitalization or similar event.
- Calculated solely for the purpose of determining the registration fee pursuant to Rule 457 under the Securities Act of 1933 and based upon the average of the high and low prices for the Registrant's Common Stock as quoted on the NASDAQ Capital Market on August 6, 2009.

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INTRODUCTORY NOTE

Pursuant to General Instruction E to Form S-8, this Registration Statement on Form S-8 registers the offer and sale of an additional 2,224,028 shares of common stock of Electro-Optical Sciences, Inc. (the "Registrant") for issuance under the Registrant's 2005 Stock Incentive Plan. The contents of the prior Registration Statement on Form S-8 filed with the Securities and Exchange Commission on July 31, 2006 (Registration No. 333-136183), relating to the 2005 Stock Incentive Plan, are incorporated herein by reference, except to the extent modified herein.

PART I

INFORMATION REQUIRED IN THE SECTION 10(a) PROSPECTUS

In accordance with the Note to Part I of Form S-8, the information specified by Part I (Items 1 and 2) is omitted from this Registration Statement.

PART II

INFORMATION REQUIRED IN THE REGISTRATION STATEMENT

Item 3. Incorporation of Documents by Reference

The Registrant hereby incorporates by reference into this Registration Statement the following documents previously filed with the U.S. Securities and Exchange Commission (the "Commission"):

(a) The Registrant's Annual Report on Form 10-K for the fiscal year ended December 31, 2008;

(b) The Registrant's Proxy Statement for its 2009 Annual Meeting of Shareholders;

(c) The Registrant's Quarterly Reports on Form 10-Q for the quarter ended March 31, 2009 and for the quarter ended June 30, 2009;

(d) The Registrant's Current Reports on Form 8-K filed with the Commission on February 13, 2009, May 8, 2009, June 4, 2009, June 10, 2009, July 14, 2009 and July 17, 2009, and on Form 8-K/A filed with the Commission on July 14, 2009; and

(e) The description of the Registrant's Common Stock contained in its Registration Statement on Form 8-A and any amendment or report filed subsequent thereto for the purpose of updating such description.

All documents filed by the Registrant pursuant to Sections 13(a), 13(c), 14 and 15(d) of the Securities Exchange Act of 1934, as amended, subsequent to the date hereof and prior to the filing of a post-effective amendment which indicates that all securities offered hereby have been sold or which deregisters all securities remaining unsold shall be deemed to be incorporated by reference herein and to be a part hereof from the respective dates of filing of such documents. The Registrant expressly excludes from such incorporation information furnished pursuant to Item 2.02 or Item 7.01 of any Current Report on Form 8-K. Any document or any statement contained in a document incorporated or deemed to be incorporated herein by reference shall be deemed to be modified or superseded for purposes of this Registration Statement to the extent that a subsequently filed document or a statement contained herein or in any other subsequently filed document which also is or is deemed to be incorporated herein by reference modifies or supersedes such document or such statement. Any such document or statement so modified or superseded shall not be deemed, except as so modified or superseded, to constitute a part of this Registration Statement.

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Item 8. Exhibits

<u>Exhibit Number</u>	<u>Exhibit</u>
5.1	Opinion of Golenbock Eiseman Assor Bell & Peskoe LLP *
10.1	2005 Stock Incentive Plan, as amended **
23.1	Consent of Eisner LLP, Independent Registered Public Accounting Firm *
23.2	Consent of Golenbock Eiseman Assor Bell & Peskoe LLP (contained in Exhibit 5.1)
24.1	Power of Attorney (included in the signature page of this Registration Statement)

* Filed herewith.

** Incorporated by reference to Registrant's Registration Statement on Form S-1, as amended (File No. 333-125517), as filed on August 8, 2005

Item 9. Undertakings

The undersigned registrant hereby undertakes that, for the purpose of determining liability of the registrant under the Securities Act of 1933 to any purchaser in the initial distribution of the securities:

The undersigned registrant undertakes that in a primary offering of securities of the undersigned registrant pursuant to this registration statement, regardless of the underwriting method used to sell the securities to the purchaser, if the securities are offered or sold to such purchaser by means of any of the following communications, the undersigned registrant will be a seller to the purchaser and will be considered to offer or sell such securities to such purchaser:

(i) Any preliminary prospectus or prospectus of the undersigned registrant relating to the offering required to be filed pursuant to Rule 424;

(ii) Any free writing prospectus relating to the offering prepared by or on behalf of the undersigned registrant or used or referred to by the undersigned registrant;

(iii) The portion of any other free writing prospectus relating to the offering containing material information about the undersigned registrant or its securities provided by or on behalf of the undersigned registrant; and

(iv) Any other communication that is an offer in the offering made by the undersigned registrant to the purchaser.

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-8, and has duly caused this Registration Statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the Village of Irvington, State of New York, on this 12th day of August 2009.

ELECTRO-OPTICAL SCIENCES, INC.

By: /s/ Joseph V. Gulfo, M.D.

Joseph V. Gulfo, M.D.

President and Chief Executive Officer

POWER OF ATTORNEY

KNOW ALL MEN BY THESE PRESENTS that each individual whose signature appears below constitutes and appoints Joseph V. Gulfo, M.D. and Richard I. Steinhart and each of them, his or her true and lawful attorneys-in-fact and agents with full power of substitution, for him or her and in his or her name, place and stead, in any and all capacities, to sign any and all amendments (including post-effective amendments) to this Registration Statement on Form S-8, and to file the same, with all exhibits thereto and all documents in connection therewith, with the Commission, granting unto said attorney-in-fact and agents, and each of them, full power and authority to do and perform each and every act and thing requisite and necessary to be done with respect to this Registration Statement, including post-effective amendments, as fully to all intents and purposes as he or she might or could do in person, hereby ratifying and confirming all that said attorneys-in-fact and agents or any of them, or his or their substitute or substitutes, may lawfully do or cause to be done or by virtue hereof.

Pursuant to the requirements of the Securities Act of 1933, this Registration Statement has been signed by the following persons in the capacities and on the date indicated.

<u>Name and Signature</u>	<u>Title</u>	<u>Date</u>
<u>/s/ Joseph V. Gulfo</u> Joseph V. Gulfo	Director, President and Chief Executive Officer (Principal Executive Officer)	August 12, 2009
<u>/s/ Richard I. Steinhart</u> Richard I. Steinhart	Vice President, Finance and Chief Financial Officer (Principal Financial and Accounting Officer)	August 12, 2009
<u>/s/ Breaux Castleman</u> Breaux Castleman	Chairman of the Board of Directors	August 12, 2009
<u>/s/ Sidney Braginsky</u> Sidney Braginsky	Director	August 12, 2009
<u>/s/ George C. Chryssis</u> George C. Chryssis	Director	August 12, 2009
<u>/s/ Martin D. Cleary</u> Martin D. Cleary	Director	August 12, 2009
<u>/s/ Anne Egger</u> Anne Egger	Director	August 12, 2009
<u>/s/ Dan W. Lufkin</u> Dan W. Lufkin	Director	August 12, 2009
<u>/s/ Gerald Wagner, PHD.</u> Gerald Wagner, PhD.	Director	August 12, 2009

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** Incorporated by reference to Registrant's Registration Statement on Form S-1, as amended (File No. 333-125517), as filed on August 8, 2005

Golenbock Eiseman Assor Bell & Peskoe LLP
437 Madison Avenue
New York, New York 10022

August 12, 2009

Electro-Optical Sciences, Inc.
3 West Main Street
Irvington, New York 10533

Ladies and Gentlemen:

We have acted as counsel to Electro-Optical Sciences, Inc., a Delaware corporation (the "Company"), in connection with a Registration Statement on Form S-8 under the Securities Act of 1933, as amended (the "Act"), relating to the issuance by the Company from time to time of up to 2,224,028 shares of Common Stock, \$0.001 par value, of the Company (the "Shares"), pursuant to the Company's 2005 Stock Incentive Plan, as amended (the "2005 Plan").

We have examined such documents and considered such legal matters as we have deemed necessary and relevant as the basis for the opinion set forth below. With respect to such examination, we have assumed the genuineness of all signatures, the authenticity of all documents submitted to us as originals, the conformity to original documents of all documents submitted to us as reproduced or certified copies, and the authenticity of the originals of those latter documents. We have also assumed that in granting future awards under the 2005 Plan, the Board of Directors of the Company or the appropriate committee thereunder will exercise its discretion in establishing the terms of such awards within the permissible limits of the law of the State of Nevada and the articles of incorporation and by-laws of the Company.

Based upon the foregoing, it is our opinion that the Common Stock to be issued by the Company under the 2005 Plan, when sold in accordance with the terms of the 2005 Plan and the individual instruments or agreements governing their issuance, will be legally issued, fully paid and nonassessable, although they may be subject to contractual restrictions established by the 2005 Plan or the individual instrument or agreement.

In giving this opinion, we have assumed that all certificates for the Company's shares of Common Stock, prior to their issuance, will be duly executed on behalf of the Company by the Company's transfer agent and registered by the Company's registrar, if necessary, and will conform, except as to denominations, to specimens which we have examined.

We hereby consent to the use of this opinion as an exhibit to the Registration Statement, to the use of our name as your counsel and to all references made to us in the Registration Statement. In giving this consent, we do not hereby admit that we are in the category of persons whose consent is required under Section 7 of the Act, or the rules and regulations promulgated thereunder.

Very truly yours,

/s/ Golenbock Eiseman Assor Bell & Peskoe LLP

CONSENT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

We consent to the incorporation by reference in the Registration Statement of Electro-Optical Sciences, Inc. (the "Company") on Form S-8, to be filed on or about August 12, 2009, of our reports dated February 26, 2009 with respect to our audits of the balance sheets of Electro-Optical Sciences, Inc. as of December 31, 2007 and 2008, and the related statements of operations, stockholders' equity and cash flows for each of the years in the three-year period ended December 31, 2008, and our audit of the Company's internal control over financial reporting as of December 31, 2008, included in the December 31, 2008 annual report on Form 10-K of Electro-Optical Sciences, Inc.

/s/ Eisner LLP

Eisner LLP

New York, New York

August 12, 2009