

Mail Stop 6010

October 4, 2005

Joseph V. Gulfo, M.D.
President and Chief Financial Officer
Electro-Optical Sciences, Inc.
3 West Main Street, Suite 201
Irvington, NY 10533

Re: Electro-Optical Sciences, Inc.
Amendment No. 4 to Registration Statement on Form S-1
Filed September 27, 2005
File No. 333-125517

Dear Dr. Gulfo:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form S-1

General

1. Tell us your plans to recirculate the prospectus so investors receive the changes since Amendment 3 to your registration statement.

Special Suitability for California Residents, page i

2. Tell us the reason for this requirement. Also tell us why purchasers would not have a resale exemption under Section 4(1) of the Securities Act.

Summary, page 1

3. If financial results for the quarter ended September 30, 2005 are available, please update your prospectus. If only partial results are known, disclose any material recent developments and ensure that corresponding updates are made throughout the prospectus. We note, for example, that your accumulated deficit disclosure on page 10 is as of June 30, 2005.

Management's discussion and analysis of financial condition and results of operations, page 36

Liquidity and Capital Resources, page 41

4. We refer you to your disclosure in the last paragraph of this section. Please clarify what you mean by the proceeds of this offering might not be available in amounts or on terms acceptable to you.

Business, page 44

Manufacturing, page 56

5. Please update us as to the status of your contract negotiation with Carl Zeiss Jena. We refer you to your disclosure in the

first
full paragraph on page 56.

Underwriting, page 87

6. Please identify any members of the underwriting syndicate that will engage in any electronic offer, sale or distribution of the shares and describe their procedures to us supplementally. If you become aware of any additional members of the underwriting syndicate

that may engage in electronic offers, sales or distributions after you respond to this comment, promptly supplement your response to identify those members and provide us with a description of their procedures.

In your discussion of the procedures, tell us how your procedures ensure that the distribution complies with Section 5 of the Securities Act. In particular:

* The communications used;

* The availability of the preliminary prospectus;

* The manner of conducting the distribution and sale, like the use of indications of interest or conditional offers; and

* The funding of an account and payment of the purchase price.

Finally, tell us whether you or the underwriters have any arrangements with a third party to host or access your preliminary prospectus on the Internet. If so, identify the party and the website, describe the material terms of your agreement and provide us

with a copy of any written agreement. Provide us also with copies of

all information concerning your company or prospectus that has appeared on their website. Again, if you subsequently enter into any

arrangements like this, promptly supplement your response.

Exhibit 5.1

7. Please ask your counsel to confirm to us in writing that it concurs with our understanding that the reference and limitation to

the Delaware General Corporate Law includes the statutory provisions

and also all applicable provisions of the Delaware Constitution.

Counsel should file this written confirmation as correspondence on the EDGAR system.

8. We note the fact that counsel will undertake no obligation to update the opinion. Given that limitation, please file an opinion dated as of the effective date of the registration statement as an exhibit to a final pre-effective amendment to your registration statement.

9. Given the assumption in the penultimate paragraph regarding the shares being issued and sold as described in the registration statement, it is unclear why the remaining assumptions in that paragraph are necessary and appropriate. Please tell us what board

resolutions are not and will not be reflected in the registration statement.

* * *

As appropriate, please amend your registration statement in response to these comments. You may wish to provide us with marked

copies of the amendment to expedite our review. Please furnish a cover letter with your amendment that keys your responses to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may

have additional comments after reviewing your amendment and responses to our comments.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing includes all information required under the Securities Act of

1933 and that they have provided all information investors require for an informed investment decision. Since the company and its management are in possession of all facts relating to a company's

disclosure, they are responsible for the accuracy and adequacy of the disclosures they have made.

You may contact Kevin Kuhar at (202) 551-3662 or Jay Webb at (202) 551-3603 if you have questions regarding comments on the financial statements and related matters. Please contact Adelaja Heyliger at (202) 551-3636 or me at (202) 551-3800 with any other questions.

Sincerely,

Russell Mancuso
Branch Chief

cc (via fax): Valerie A. Price, Esq., Dreir LLP 212.652.3789

Joseph V. Gulfo, M.D.
Electro-Optical Sciences, Inc.
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