

Mail Stop 6010

June 30, 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.
Registration Statement on Form S-1
Filed June 3, 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

Prospectus Inside Front Cover Page

1. We note your disclosure that you "do not make any representation as to the accuracy" of the industry data and forecasts and market research included in your prospectus. Please note that it is inappropriate to suggest that you do not have responsibility for the accuracy of disclosure in the registration statement. Please revise your disclosure accordingly.
2. Please provide us with copies of the industry reports and market data cited throughout the registration statement, clearly marking the relevant sections, and identify any reports prepared specifically for your use.

Prospectus Summary, page 1

3. Please expand the summary to clarify that you currently do not have any commercialized product or significant source of revenue and that your revenues to date were derived from the DIFOTI product, which was recently discontinued.
4. Also clarify your anticipated timeframe for commercialization of MelaFind, assuming you receive premarket approval for MelaFind in 2007, as you currently anticipate. Also disclose the length of time it may take to obtain Medicare coverage.
5. We note your disclosure in the second paragraph on page 1 that you have entered into a binding Protocol Agreement with the FDA to conduct a pivotal trial. Please also disclose that such a trial was initiated in 2004, but that you experienced technical operational

issues which require refinement to your hardware systems. We refer you to your disclosure in last paragraph on page 46 of the prospectus.

6. Please tell us when you anticipate the completion of the websites mentioned on page 3 of the prospectus.

The Market Opportunity, page 1

7. Revise the first few sentences to provide industry data regarding the incidence of melanoma, which appears to be a more relevant statistic than the incidence of all skin cancers.

Risk Factors, page 7

8. Please eliminate the last two sentences of the introductory paragraph and revise as necessary to include a discussion of all material risks in the Risk Factors section.

Dilution, page 32

9. Please expand your disclosure to include the further dilution to new investors assuming your underwriters' over-allotment is exercised in full, if material.

Our Business, page 43

10. Throughout the filing, please define or explain medical and regulatory terms, such as "dermatohistopathological" review on page 47, "spectrophotometric intercutaneous" analysis on page 53, and references to "QSR" and "ISO 9000 series" standards.

MelaFind Product Description, page 45

11. Please explain in greater detail the "appropriate limits" as it pertains to the MelaFind's functionality. We refer you to your disclosure in the penultimate paragraph on page 46.

MelaFind Regulatory Status, page 46

12. Explain statistical terms used, such as "binomial lower confidence bound," and quantify the "statistically significant greater specificity" needed to rule out melanoma. Also explain the difference between a "pilot" trial and a "pivotal" trial and update us as to the status of the pilot trial. We refer you to your disclosure in the last sentence on page 46.

Clinical Studies of MelaFind, page 47

Results of Training Studies and Blinded Tests, page 48

13. It is unclear what, if any, conclusions can be gleaned from the cumulative results of your training studies and blinded tests regarding the effectiveness of your product. The results appear to show that MelaFind's effectiveness varies greatly when compared to the results of study dermatologists. Please revise and expand your disclosure to include a conclusion as to how the latest iteration of your product compares with the effectiveness of expert dermatologists.

14. We refer you to the January 2005 Test Results on page 50.

Please provide the basis for your belief that your products sensitivity would have been 96.4% had the device performed within specifications.

Our Reimbursement Strategy, page 51

15. Please expand your disclosure to provide more specific detail as to how you plan to accomplish your reimbursement strategy. For example, tell us how you plan to secure coverage by private payors and Medicaid agencies, particularly in light of the Risk Factors mentioned on page 9 of the registration statement.

16. Please explain why you believe physicians might be willing to pay to use MelaFind and not charge patients for its use. We refer you to

your disclosure on in the first paragraph on page 52.

Competition, page 52

17. Please explain the significance of comparing the specificity of dermatologists in DB-Mips studies to the specificity of dermatologists in MelaFind studies. Additionally, please disclose the reported sensitivity of the DB-Mips system and tell us how it compares to that of the MelaFind. We refer you to the last paragraph on page 52.

Intellectual Property, page 54

18. Please describe the importance to your business and the duration and effect of all material patents. Refer to Item 101 (c) (iv) of Regulation S-K.

Management, page 62

Board of Directors Composition, page 63

19. Please identify the "certain directors" elected to the board pursuant to the voting agreement among you and certain shareholders. Also, in the Related Party Transactions section of the prospectus, please describe the material terms of the voting agreement and disclose which shareholders have representatives on your board of directors.

Executive Compensation, page 67

20. Confirm that you have filed all employment agreements with all named executive officers.

Consulting Agreements, page 70

21. Please tell us why you have not filed your consulting agreement with Dr. Friedman as an exhibit to the registration statement.

Principal Stockholders, page 73

22. Please identify the natural persons who beneficially own the shares held by Caremi Partners Ltd., or clarify in the footnote that such person is Steven Ruchefsky.

Legal Matters, page 86

23. Delete the second and third sentences, since investors are entitled to rely on the opinion to be filed as an exhibit from counsel regarding the legality of the securities being offered.

Financial Statements, page F-1

24. Consideration should be given to the updating requirements of Rule 3-12 of Regulation S-X.

25. Please revise to disclose all significant transactions with related parties separately on the face of the financial statements and in the notes to the financial statements. Refer to SFAS 57 and Rule 4-08 (k) of Regulation S-X.

Report of Independent Registered Public Accounting Firm, page F-2

26. We note your auditor's plan to render their opinion upon the effectiveness of a one-for-two reverse common stock split. Prior to going effective this audit report should be removed and the audit report on the financial statements should be signed.

Statement of Stockholders` (Deficiency) Equity, page F-5

27. Provide us with an itemized chronological schedule detailing each issuance of your common shares, preferred stock, stock options and warrants since January 2004 through the date of your response. Include the following information for each issuance or grant date:

- * Number of shares issued or issuable in the grant
- * Purchase price or exercise price per share
- * Any restriction or vesting terms
- * Management's fair value per share estimate
- * How management determined the fair value estimate
- * Identity of the recipient and relationship to the company
- * Nature and terms of any concurrent transactions with the

recipient

* Amount of any recorded compensation element and accounting literature relied upon to support the accounting.

In the analysis requested above, highlight any transactions with unrelated parties believed by management to be particularly evident of an objective fair value per share determination. Please provide us with a chronological bridge of management's fair value per share determinations to the current estimated IPO price per share. Also, indicate when discussions were initiated with your underwriter(s) about possible offering price ranges. We will delay our assessment of your response pending inclusion of the estimated IPO price in the filing.

28. We are deferring any evaluation of stock compensation recognized until the estimated offering price is specified, and we may have further comments in that regard when you file the amendment containing that information.

29. We believe that the following disclosures would be helpful to an investor since changes in your methodologies and assumptions could have a material impact upon your financial statements. Please revise to provide the following disclosures in MD&A:

* Discuss the significant factors, assumptions and methodologies used in determining fair value for options granted during the twelve months prior to the date of the most recent balance sheet.

* Discuss each significant factor contributing to the difference between the fair value as of the date of grant and the estimated IPO price for options granted during the twelve months prior to the date of the most recent balance sheet.

* Disclose the valuation method used and the reasons why you chose that method.

* Quantify any known or expected compensation expense to be recorded in the accounting period the offering takes place as well as periods subsequent thereto.

Notes to Financial Statements, page F-7

Note 1. Principal Business and Summary of Significant Accounting Policies, page F-7

30. Please revise the warranty cost accounting policy disclosures on page F-8 to clearly indicate your policy complies with FASB Statement

5. If necessary, tell us why your policy for these costs doesn't comply with the Statement.

Note 8. Stockholders' (Deficiency) Equity and Redeemable Preferred Stock, page F-14

31. We see on page F-5 that the reduction of the liquidation value of your Series B preferred stock resulted in a charge of \$2,125,600 in fiscal 2003. Additionally, we see that other modifications were made to Series A and Series B preferred stock and see that additional shares were issued to Series B shareholders. Please tell us in detail and revise to explain how you valued, recorded and accounted for this transaction. Please cite the guidance upon which you relied to support your accounting for the modifications.

32. We see that as a result of the October 2004 sales of the

Series C preferred stock, you recorded a \$2.4 million charge due to a beneficial conversion feature. Please tell us and revise the filing to disclose details of the calculation of the charge and discuss how the conversion price was determined. Please tell us the authoritative guidance upon which you relied to support your accounting.

33. We see that at December 31, 2004 and March 31, 2005 there are approximately \$1,506,000 and \$1,674,000 of deemed but unpaid dividends. We also see in the event the Series B and Series C preferred stock is converted into common stock, any related deemed dividends would be forfeited. Please explain how you determined the stated amount of unpaid deemed dividends at December 31, 2004 and March 31, 2005. Provide us with the accounting entries that were made in connection with recording deemed dividends. Be sure to explain how the change from December 31, 2004 to March 31, 2005 in the amounts of deemed but unpaid dividends make sense given the deemed dividend amounts presented in your 2005 interim statements of operations. Also, tell us the accounting implications of the forfeiture of deemed dividends, if any. Finally, revise the filing to clarify these matters.

Note 9. Stock Options and Warrants, page F-16

Warrants, page F-16

34. We noted various issuances of warrants in conjunction with sales of preferred stock and as compensation to consultations. Please revise to disclose how you accounted for and valued the issuance of these warrants. Also, disclose the fair value of your stock at the dates of issuance, how the value was determined and the amount of any compensation expense recorded for each of the issuances.

35. We see that on April 5, 2005, the Board of Directors approved, subject to stockholder approval, the issuance of 1,305,321 shares of your common stock in exchange for 2,610,643 outstanding warrants and also see you consider this transaction to be an exchange of equity instruments at fair value which will have no net effect on stockholders' equity. Please tell us why you believe the described accounting is appropriate. Support your assertions with references to authoritative U.S. generally accepted accounting principles.

Note 11. Subsequent Events, page F-18

36. We see you decided to discontinue all operations associated with your DIFOTI product effective as of April 5, 2005. Note that for discontinued operations that are not yet required to be reflected in historical statements under FASB Statement 144, pro forma financial statements reflecting the transaction for the latest balance sheet and income statements for all periods are required. Please revise the filing as necessary based on our comment.

Part II

Item 16. Exhibits and Financial Statement Schedules

Exhibit 23.1

37. Please include a currently dated and signed consent from your independent auditors with any amendment filed.

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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.

Notwithstanding our comments, in the event the company requests acceleration of the effective date of the pending registration statement, it should furnish a letter, at the time of such request, acknowledging that:

- * should the Commission or the staff, acting pursuant to delegated authority, declare the filing effective, it does not foreclose the Commission from taking any action with respect to the filing;
- * the action of the Commission or the staff, acting pursuant to delegated authority, in declaring the filing effective, does not relieve the company from its full responsibility for the adequacy and accuracy of the disclosure in the filing; and
- * the company may not assert staff comments and the declaration of effectiveness as a defense in any proceeding initiated by the Commission or any person under the federal securities laws of the United States.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in connection with our review of your filing or in response to our comments on your filing.

We will consider a written request for acceleration of the effective date of the registration statement as confirmation of the fact that those requesting acceleration are aware of their respective responsibilities under the Securities Act of 1933 and the Securities Exchange Act of 1934 as they relate to the proposed public offering of the securities specified in the above registration statement. We will act on the request and, pursuant to delegated authority, grant acceleration of the effective date.

We direct your attention to Rules 460 and 461 regarding requesting acceleration of a registration statement. Please allow adequate time after the filing of any amendment for further review before submitting a request for acceleration. Please provide this request at least two business days in advance of the requested effective date.

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,

Peggy A. Fisher

cc (via fax): Valerie A. Price, Esq., Dreir LLP 212.652.3789
David C. Peck, Esq., Greenberg Traurig, LLP 212.801.6400

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