



DIVISION OF
CORPORATION FINANCE

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

Mail Stop 3030

September 29, 2009

VIA U.S. MAIL and FACSIMILE

Richard I. Steinhart
Chief Financial Officer
Electro-Optical Sciences, Inc.
3 West Main Street, Suite 201
Irvington, NY 10533

**Re: Electro-Optical Sciences, Inc.
Form 10-K for fiscal year ended December 31, 2008
Filed March 15, 2009
Form 10-Q for the fiscal quarter ended June 30, 2009
File No. 000-51481**

Dear Mr. Steinhart:

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 10-K for the fiscal year ended December 31, 2008

Financial Statements

1. We see that you are focused on the development of the Melafind product and that you have not generated any sales to date. Please tell us how you considered whether you are a development stage company under FASB ASC 915 and should include all of the disclosures in your financial statements required for development stage companies.

Note 8. Stock-Based Compensation and Warrants, page 61

2. We reference the disclosure in the 10-K that you use implied volatility from other publicly-traded options and other factors to estimate your expected volatility. We also reference the revised disclosure in the Form 10-Q for the fiscal quarter ended June 30, 2009 related to the calculation of expected volatility. Moreover, we see that you have used an expected volatility of 60% since 2004. Tell us why your volatility assumption is appropriate under the guidance set forth in FASB ASC 718-10-55-35 through 51 and SAB Topic 14D-1. Discuss why the volatility factor does not vary from period to period and has remained 60% for each year and for the 2009 interim periods.
3. Please revise future filings to also disclose the total compensation cost related to nonvested awards not yet recognized and the weighted-average period over which it is expected to be recognized, as required by FASB ASC 718-10-50-2(i).

Note 10. Other Income (including gain on sale of discontinued operations), page 64

4. We see that you discontinued all operations associated with your DIFOTI product in 2005 and that you then subsequently executed a licensing agreement in 2006 with KaVo to further develop and commercialize DIFOTI. Please tell us how you determined that the payments under the licensing agreement should be recorded within other non-operating income rather than within discontinued operations or other operating income. Please reference the accounting literature that you relied upon to support the classification.

Form 10-Q for the fiscal quarter ended June 30, 2009

Item 4. Controls and Procedures, page 22

5. We note your statement that your chief executive officer and chief financial officer have concluded that your disclosure controls and procedures were “sufficiently effective.” It does not appear that your certifying officers have reached a conclusion that your disclosure controls and procedures are *effective*. Please confirm to us that disclosure controls and procedures were effective at June 30, 2009 and revise future filings to clearly address your officers’ conclusions regarding the effectiveness of your disclosure controls and procedures.

Please respond to these comments within 10 business days or tell us when you will provide us with a response. Please furnish a cover letter with your response 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 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 Exchange Act of 1934 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.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- staff comments or changes to disclosure in response to staff comments do not foreclose the Commission from taking any action with respect to the filing; and
- the company may not assert staff comments 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 our review of your filing or in response to our comments on your filing.

Richard I. Steinhart
Electro-Optical Sciences, Inc.
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You may contact Kristin Lochhead, Staff Accountant, at (202) 551-3664 or me at (202) 551-3676 if you have questions regarding comments on the financial statements and related matters. In this regard, please don't hesitate to contact Martin James, Senior Assistant Chief Accountant, at (202) 551-3671 with any questions.

Sincerely,

Brian Cascio
Accounting Branch Chief