

Electro-Optical Sciences, Inc.
Three West Main Street
Irvington, NY 10533

October 7, 2009

US Securities and Exchange Commission
100 F Street NE
Washington, DC 20549
Attn: Brian Cascio
Accounting Branch Chief

Re: Electro-Optical Sciences, Inc.
Form 10-K for the 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. Cascio:

Reference is made to the letter from the Division of Corporation Finance (the "Staff") of the Securities and Exchange Commission (the "Commission"), dated September 29, 2009, setting forth comments to the Form 10-K for the fiscal year ended December 31, 2008 and the Form 10-Q for the fiscal quarter ended June 30, 2009 filed by Electro-Optical Sciences, Inc. (the "Company"). Set forth below are the Staff's comments, indicated in bold, and the Company's responses.

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

Financial Statement

- 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.**

Company Response:

Electro-Optical Sciences, Inc. was incorporated in 1989, and was initially engaged in contract research mainly with US government agencies. Later in the 1990's the Company developed and commercialized (later discontinued) a medical device named DIFOTI.

Revenue for both businesses was significant in years since at least 1999. Accordingly, the Company emerged no later than 1999 from the Development Stage. Having then emerged from the Development Stage, the Company was thereafter not subject to the reporting requirements of FASB ASC 915.

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 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.**

Company Response:

FASB ASC 718-10-55 acknowledges that there is likely to be a range of reasonable estimates for volatility and the resulting fair value. FASB ASC 718 also requires that if a best estimate cannot be made, management should use the mid-point in the range of reasonable estimates. After assessing all available information the Company concluded that a combination of a number of factors provided its best estimate of expected volatility.

The Company has only been a publicly reporting entity since November 2005. Option grants awarded by the Company carry a minimum of a 5 year term. Since the expected option term exceeds the period of historical volatility the Company relied more heavily on an implied volatility from other similar publicly traded companies while continuing to monitor its own stock price volatility. In addition, over the first several years our stock was thinly traded and we believe not representative of longer term volatility.

Using accepted methods for computing volatility, we have monitored and calculated the volatility of the Company's stock from inception as a public company. Through December 31, 2008, such volatility was calculated at 58.19%. Accordingly, 60% continued to reflect, in our view, an appropriate representation of our long term stock volatility. Through June 30, 2009, using the same methodology, volatility was calculated at 65.11%

While the trend seems to indicate an increase in volatility we preformed a sensitivity analysis at June 30, 2009 and concluded that the difference in fair market value, vis a vis option grants in 2009 to date, utilizing the 65.11% and the 60% volatility would not have resulted in a material change to the fair value of options granted.

In future filings the Company will consider utilizing and disclosing its estimate of volatility as a range rather than as a single percentage.

- 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).**

Company Response:

In our 10-K for the fiscal year ended December 31, 2008, in Note 8 to the Notes to Financial Statements for the years ended December 31, 2008, 2007 and 2006 (on the bottom of page 62), we state:

“As of December 31, 2008, of the total 2,069,080 options outstanding 1,300,677 have not vested. Of this total unvested amount 980,152 will vest upon the attainment of certain milestones, and the balance will vest over the requisite service period. There was \$3,300 of total unrecognized compensation cost related to unvested options, of which approximately \$2,201 will be recognized upon PMA approval, \$473 upon achievement of other milestones and \$626 upon completion of the requisite service period over four years.”

In future filings we will disclose the weighted average vesting period for the non-milestone, nonvested awards not yet recognized in accordance with the requirements of 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 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 disclosed within discontinued operations or other operating income. Please reference the accounting literature that you relied upon to support the classification.**

Company Response:

The Company discontinued all operations associated with DIFOTI effective April 5, 2005. This was done to focus the Company's resources on the development and commercialization of MelaFind®. In 2005 management recognized that there were several business issues associated with the DIFOTI device and concluded that the Company had neither the management time nor the financial resources necessary to address those issues and continue the development of MelaFind®.

The sale and licensing of DIFOTI in 2006 was to KaVo Dental, GmbH (KaVo), an industry leading dental company. Because of the size and financial strength of KaVo and its parent company, at the time of the sale we had no concerns over the collectability of the \$1million sale price, which has been received on a timely basis.

Since the sale in 2006, the Company has had only incidental, non substantive, involvement with the product in connection with the sale (assisting the buyer with transitional matters only), and no involvement with the operations.

In Item 7 (Management's Discussion and Analysis of Financial Condition and Results of Operations) - Critical Accounting Policies and Significant Judgments and Estimates — Revenue Recognition of our 10-K for the fiscal year ended December 31, 2006 (File No. 000-51481), filed with the Commission on March 15, 2007 (on page 45), we state:

“With the completion of the sale and licensing transaction to KaVo in December 2006, we do not expect to have any significant continuing responsibility for the DIFOTT® business.”

Furthermore, in our 10-K for the fiscal year ended December 31, 2006, in Note 10 to the Notes to Financial Statements for the years ended December 31, 2006, 2005 and 2004 (on page 71), we state:

*“Beginning in 2008 or earlier, KaVo is required to pay to the Company a royalty stream based upon the worldwide aggregate net sales of the licensed product, as defined in the license agreement, or a set minimum. The Company has recorded a gain of \$781 on the sale and licensing of its remaining DIFOTT® assets based upon the cash proceeds and the discounted value of the second payment. Royalties, **if any**, (emphasis added) will be recorded when earned.”*

The Company used this language because it did not expect to earn material royalty amounts from KaVo.

In 2008, the Company recorded royalties of \$10,000 to other income because it was an immaterial amount. For the six months ended June 30, 2009, the Company accrued an additional \$10,000 (also to other income) representing 50% of the annual minimum royalty which amount is also immaterial.

Form 10Q 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 were effective at June 30, 2009 and revise future filings to clearly address your officers’ conclusions regarding the effectiveness of you disclosure controls and procedures.**
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Company response:

The Company confirms that its disclosure controls and procedures were effective at June 30, 2009. We will revise future filings to clearly address our officers' conclusions regarding the effectiveness of our disclosure controls and procedures.

The Company acknowledges that: (i) the Company is responsible for the adequacy and accuracy of the disclosure in the filing, (ii) 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 (iii) 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.

If you have any further questions, please do not hesitate to contact the undersigned.

Respectfully submitted,

/s/ Richard I. Steinhart

Richard I. Steinhart

Vice President and CFO

Electro-Optical Sciences, Inc.