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

DIVISION OF
CORPORATION FINANCE

August 9, 2011

Via E-mail
Gordon E. Nye
President and Chief Executive Officer
ZELTIQ Aesthetics, Inc.
4698 Willow Road, Suite 100
Pleasanton, CA 94588

Re: ZELTIQ Aesthetics, Inc.
Registration Statement on Form S-1
Filed July 13, 2011
File No. 333-175514

Dear Mr. Nye:

We have reviewed your registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by amending your registration statement and providing the requested information. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing any amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Artwork

1. We note your proposed graphics at the front of the prospectus. It is unclear how the images presented relate to your product. Please tell us your basis for using the proposed graphics or remove them.

Prospectus Summary

2. Your summary should provide a balanced description of your business rather than providing a separate risk section in the summary. Please describe the risks and drawbacks of your product as prominently as your disclosure about the benefits of your product. Revise your summary accordingly. In addition, we note your disclosure at the end of the second paragraph regarding your revenues; please balance this statement with a statement describing your losses.

3. Your summary disclosure is not clear as to the primary markets in which your product is sold. Please revise the third paragraph to identify with greater specificity these markets and the percentage of revenue accounted for by each.

Market Overview, page 1

4. Please tell us how you define "aesthetic procedures" and "non-surgical aesthetic procedures." In addition, please tell us why you believe it is appropriate to describe the market for your product in these terms. For instance, we note that the market for "aesthetic procedures" would appear to include many individuals other than those that may benefit from your product.

Our Solution, page 2

5. Please provide us with independent support, including relevant articles and abstracts, for your statements in the prospectus regarding the noticeable and measurable results your product provides. In this regard, we note, for example, your statements in the first and second bullets on page 2. Please mark the supporting materials so that they are tied to the disclosure. If you are relying on results from the pivotal study that you identify on page 75, please balance your disclosure in the summary and elsewhere by (i) identifying the study as the basis for your statements, (ii) disclosing the number of individuals in the study and (iii) describing the inherent shortcomings, if any, of relying on a limited study.

6. We note your statements regarding safety in the second bullet point on page 2 and we note your disclosure in the second full paragraph on page 77 regarding the four adverse events reported in your pivotal study. With a view towards balancing your disclosure here and in the Business section, please tell us whether you have received reports of other adverse events outside of your clinical study and why you are limiting your disclosure to events that would require a report under the FDA's MDR regulations, rather than describing more broadly adverse events of which you are aware.

7. We note your disclosure in the second bullet point on page 3 that you believe there is strong consumer demand from individuals who have stubborn fat bulges but are not significantly overweight. Please tell us why your product cannot be used by individuals that are significantly overweight and how you define those individuals who are not appropriate for your procedure. If weight restrictions reduce the potential size of your market, you should disclose this fact more prominently in the summary.

Our Strategy, page 3

8. Please expand your definition of the term "aesthetic specialists" so that investors can understand your potential market.

The Offering, page 5

9. We note the penultimate bullet point on page 6 states that the amendment and restatement of your certificate of incorporation and bylaws will not occur until after this offering. Please tell us why you will not amend and restate prior to effectiveness and what assurances investors have that these actions will occur after the offering.

Risk Factors, page 9
Our manufacturing operations and those of our key…, page 15

10. We note your disclosure here and on page 80. It is not clear whether the single source critical integrated circuit and the connector referenced in this risk factor are manufactured by parties other than OnCore Manufacturing LLC, Coastline International, Katcheco, Inc., or Unicep Packaging, Inc. To the extent that these parts and/or other critical components are supplied by a single source, please revise your disclosure to discuss the source and file material agreements, as appropriate.

Even though we market and sell…, page 17

11. Please expand this risk factor to describe the material aspects in which states differ in their definitions of the term "licensed practitioner."

12. Please provide an example of how a licensed practitioner who lacks medical expertise could adversely affect your company. In this regard, please reconcile your disclosure in this risk factor with your disclosure throughout the prospectus that you intend to selectively market your product to customers with certain target characteristics. Given that you intend to be selective in your marketing, the risk presented by inexperienced or otherwise undesirable practitioners is not clear. Please advise. In addition, please describe the target characteristics that you will use to identify appropriate customers.

The regulatory clearance and approval process…, page 19

13. We note your statement that the 510(k) process is "expensive." Please quantify the expenses associated with seeking clearance for use of your product on body parts other than the flanks so that investors can understand the scope of this risk. Also, please describe whether you will be required to conduct separate studies for each part of the body for which you seek approval.

We and our contract manufacturers and suppliers are subject…, page 20

14. Please state, if true, that you, your contract manufacturers and your suppliers comply with the FDA's Quality System Regulation to the extent applicable.

If we are unable to obtain, maintain, and enforce…, page 23

15. Refer to the final sentence on page 23. Please expand this risk, or add a new risk, to discuss the factors that make the protection of patents related to medical technology and aesthetic products "even more uncertain" outside the United States.

We rely on a license relationship with Massachusetts General Hospital…, page 24

16. Please revise the Business section to explain how MGH's "primary control" over your core intellectual property affects your business, including your ability to explore new uses that might expand your business.

Market, Industry, and Other Data, page 33

17. Note that it is inappropriate to disclaim the accuracy of the information in the prospectus. Revise to clarify, if true, that you believe the information in the prospectus to be reliable as of the date of the prospectus. To the extent you are unable to make this representation, please remove such information.

Use of Proceeds, page 34

18. Please briefly identify the "remaining milestone obligations" and disclose whether the milestone amounts to be paid are currently due or prepayments against amounts that will be due in the future. Also, please tell us if MGH has informed you whether it intends to receive stock for a portion of the milestone payment.

19. We note that you have listed several general corporate purposes in the final paragraph of this section; however, you state that the amounts and timing of these expenditures have not been identified. Please disclose, if known, the priority of the intended uses.

Capitalization, page 35

20. Please revise to remove the caption relating to cash and cash equivalents from your presentation of capitalization.

21. We note from page F-19 that your Series A, B, C, and D preferred stock will automatically convert into shares of common stock at the then effective conversion price for each such share immediately upon the earlier of (i) the Company's sale of its common stock in an underwritten public offering pursuant to a registration statement under the Securities Act of 1933, as amended, which the Company has a valuation above $175 million and results in aggregate gross proceeds to the Company of at least $30 million, or (ii) the date specified by the written consent or agreement of the holders of at least 60% of the then outstanding shares of Series A, Series B, Series C, and Series D convertible preferred stock. In connection with your pro forma presentation in the filing, please

confirm to us that you currently expect the offering to meet all of the conditions for automatic conversion. If you subsequently conclude the conditions may not be satisfied, please revise the filing accordingly. Please note that this comment also applies to your presentation on pages 8, F-3, and F-4.

22. We also note that you have reflected the the reclassification of your outstanding convertible preferred stock warrant liability to additional paid-in capital upon the completion of your initial public offering and the filing of your amended and restated certificate of incorporation upon completion of your initial public offering. Please tell us and revise your filing to explain why you have included these items as pro forma adjustments that are based upon factually supportable transactions that are probable of occurring as of the most recent balance sheet date upon your initial public offering and how these adjustments comply with the guidance in Article 11 of Regulation S-X.

Management's Discussion and Analysis and Results of Operations and Financial Condition, page 41
-Stock-based Compensation, page 45

23. We note that in connection with estimating the fair value of each stock-based award you have used the historical volatilities of several unrelated public companies that are deemed comparable to your business. Please describe to us in greater detail the nature of the comparable public companies you selected and the basis for your conclusion to select those companies. Discuss how you considered factors such as industry, stage of life cycle, size and financial leverage when selecting the comparable companies. Refer to paragraphs 718-10-55-36 and 37 of the FASB Accounting Standards Codification and Question 6 in SAB Topic 14.D.1.

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

25. Please include an updated discussion of 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 once you have determined your IPO price range.

26. For each valuation date, describe in more details how you determined the significant assumptions used in the valuations, including the weighting between the income and market approaches, the risk-adjusted discounts, the non-marketability discounts and the estimated holding periods.

27. We note that you changed the fair value of your common stock underlying your stock options issued for the options awarded on September 28, 2010, November 30, 2010, and February 17, 2011.

- Please revise your filing to clarify if you performed contemporaneous or retrospective valuations on the date of each stock option grant.

- Please revise your filing to explain in more detail why you changed the fair value of your common stock underlying your stock options issued for the options awarded on September 28, 2010, November 30, 2010, and February 17, 2011.

Procedure fees revenues, page 52

28. We note that the revenues from procedures have increased from 17% to 30% of revenues between the year ended December 31, 2010 and the three months ended March 31, 2011. Please discuss this increase in fee revenue *as a percentage of total revenues* and explain what you believe this increase represents. For example, please tell us whether you believe this increase represents a relative decrease in sales of your system. If this is a trend, please provide a discussion in the overview of MD&A, as appropriate.

Loan Agreement, page 59

29. With a view to disclosure, please tell us the nature of your non-compliance, if any, with the terms of your loan agreement. To the extent that you have in the past received waivers from the lenders, please describe the terms of the waivers and whether you were subsequently able to re-establish compliance with the terms of loan agreement.

Business, page 63

30. Please revise, where appropriate, to quantify the cost to customers to purchase and operate the CoolSculpting System.

Mission, page 63

31. Note that marketing language is inappropriate in a disclosure document. Please delete this section and revise the prospectus accordingly.

Market Overview, page 64

32. Please revise this section to provide balanced disclosure, including appropriate discussion regarding the advantages of existing alternative fat reduction methods and the drawbacks of the CoolSculpting System. Your current disclosure focuses disproportionately on your strengths and your competitors' weaknesses.

The CoolSculpting Experience, page 69

33. You state that the first step in your process is a patient consultation with a physician. Please tell us whether the initial patient consultation could also be with a licensed practitioner. If not, please explain why.

Clinical History and Development of CoolSculpting, page 73

34. While we note you have discussed the clinical history of your technology, it does not appear you have discussed your corporate history. Please provide an appropriate discussion as required by Item 101(a) of Regulation S-K.

Research and Development, page 77

35. We note the second paragraph of this section. With a view to disclosure, tell us about other potential therapeutic uses that you plan to explore. Please consider this comment together with comment 16 above.

Physician Marketing and Support Programs, page 79

36. Please explain how the S.T.E.P. certification process is different than the normal training required prior to operation of your product. In addition, please describe the "medical background" of your support specialists.

Customer Support, page 79

37. Please disclose whether your employees or third-parties are responsible for service calls and how you can assure that the service will be prompt. Describe the size and geographic coverage of your service teams.

Competition, page 80

38. Please expand your disclosure to more specifically identify your competitors. For example, it is unclear what non-invasive and minimally invasive procedures for body contouring you are competing against.

MGH License Agreement, page 81

39. Please disclose the amount of consideration payable under items (i) and (ii) of the first paragraph of this section. In addition, please disclose the cap on the total percentage of stock that MGH may own.

OnCore manufacturing Services Agreement, page 82

40. Please disclose the warranty and indemnification provisions, if any, under this agreement.

Director Independence, page 93

41. We note the last sentence of this section stating that you do not consider Mr. Foley an independent director. Please tell us what compensation was paid to Mr. Foley and how it affects his independence.

42. Please tell us whether you believe Mr. Stockman, due to the compensation committee interlocks disclosed on page 96, or Mr. Roberts, due to the amounts paid under the Brazilian Distribution Agreement described in your related party disclosure, are properly considered independent directors. We also note Mr. Stockman's membership on the audit committee.

Director Compensation, page 96

43. Please confirm that you intend to update your disclosure prior to effectiveness to discuss the non-employee director compensation policy that you identify in the first paragraph.

Compensation Process, page 99

44. We note your discussion of market compensation data in the second and third paragraphs of this section, including your references to the study prepared by Radford Surveys and your engagement of Compensia Please identify the peer companies that you relied upon in your "informal" benchmarking of compensation.

45. We note that your committee engaged Compensia in June 2011 to provide executive compensation services for 2011. We also note your disclosure that 2010 compensation "may not be indicative of the manner in which we will compensate our named executive officers going forward." Please tell us whether any steps have been taken or are planned with regard to potential changes in your executive compensation policies. See Instruction 2 to Item 402(b).

Base Salary, page 100

46. Please provide disclosure explaining how you determined the amount of base salary to pay to each named executive officer. For example, even though 2010 base salaries were not increased over 2009, it is unclear how base salaries were set prior to 2010 and why they were not adjusted in 2010. As another example, please disclose how the compensation committee determined what to pay Mr. Poinsett upon joining the company.

Stock Based Incentive Awards, page 102

47. Please revise your disclosure to provide substantive analysis and insight into how your compensation committee made its stock option grant determinations with respect to each named executive officer. Refer to subparagraphs (b)(1)(iii) and (v) of Item 402 of Regulation S-K. For example, please discuss and analyze how the compensation committee determined the actual number of shares underlying the stock options that were awarded to your named executive officers and how and why those awards varied among the named executive officers.

48. In the final paragraph of this section, you state that "equity incentives have been granted *principally* with time-based vesting." [*Emphasis added*]. To the extent that equity incentives have been granted other than on a time-based vesting schedule, please explain.

2010 Summary Compensation Table, page 104

49. We note the termination payments to Mr. Levinson and Ms. Newman. Please provide disclosure in the Compensation Discussion and Analysis as to how those amounts were determined by the compensation committee or the board of directors.

Employment Arrangements, page 109

50. Please disclose the performance targets for Mr. Nye and Mr. Howe referenced in the final sentences of the first and second paragraphs of this section, respectively. Alternatively, please provide an appropriate cross-reference to this discussion.

Principal Stockholders, page 116

51. Please identify the individuals with beneficial ownership over the shares held by the entities listed in the table. For example, it is unclear who has beneficial ownership over the shares held by Venrock Associates.

Related Party Transactions, page 118

52. Please provide a breakdown of the interests held by the investors in the October 2009 bridge loan agreement and whether there were any other payments made in connection with this agreement. Also, disclose how many shares of D-1 convertible preferred stock were issued to the holders and whether, and to what extent, the shares were issued in exchange for cash or for forgiveness of the bridge loan.

Restricted Stock Purchase Agreement, page 119

53. Please clarify what you mean when you refer to the "entirety" of the amounts outstanding under the loan to Mr. Levinson. For example, please tell us how the accrual of interest has affected the amount owed to the company. In this regard, it would appear that the amount outstanding may be more than the original aggregate principal amount.

54. Please tell us whether this transaction is the same transaction as described in note 7 on page F-17 and if so, please reconcile the interest rates disclosed.

Brazilian Distribution Agreement, page 119

55. Please disclose the material terms of this agreement, including the dollar value of the transaction, as well as term, termination and any other material provisions.

Index to the Financial Statements, page F-1

56. Please revise to include updated financial statements and related disclosures in your filing as required by Rule 3-12 of Regulation S-X.

Note 2. Summary of Significant Accounting Policies, page F-8
-Revenue Recognition, page F-11

57. We note from page 42 and throughout the filing that your CoolCard product contains software. Please tell us and revise your filing to explain how you considered the guidance in Topic 985 of the FASB Accounting Standards Codification related to the sale of your products that contain software.

58. Please revise your filing to include a more detailed discussion of the significant factors, inputs, assumptions, and methods used to determine your third-party selling price or estimated selling price for the significant deliverables. Refer to the guidance in 605-25-50-2(e) of the FASB Accounting Standards Codification.

59. We note your disclosures that delivery "typically" occurs upon shipment. Please explain the circumstances in which delivery does not occur upon shipment and the impact on your revenue recognition policies. Revise your filing as necessary

-Warranty, page F-12

60. We note that you provide a limited warranty on your products including a three year warranty for your control units and one year warranty for your applicators. We further note that you base your warranty accrual upon historical and forecasted trends in the volume of your product failures during the warranty period and the cost to replace or repair the equipment. We finally note that you only received FDA clearance in 2010 and

prior to 2010 that you had limited to no revenue related to the sale of your products. Please tell us and revise your filing to explain in more detail how you are able to estimate this liability considering that you have only been selling this product since fiscal 2010 and only on a limited basis prior to that timeframe.

Note 9. Convertible Preferred Stock, page F-18

61. We note that you issued Series A, B and C preferred stock that contain a conversion feature that was adjusted upon the issuance of your Series D-1 preferred stock. We further note that these conversion prices including your Series D-1 and Series D-2 conversion prices are subject to adjustment. Please tell us and revise your filing to include your analysis of the conversion terms of the preferred stock under paragraphs 470-20 and 815-15 of the FASB Accounting Standards Codification. Please also include a discussion of your analysis of the amended conversion terms.

Note 10. Preferred Stock Warrant Liability, page F-20

62. We note that you value your preferred stock warrants using the Black-Scholes-option pricing model. Please revise your filing to discuss how you determined the underlying inputs utilized within this valuation model. Refer to paragraph 718-10-50-20-2(f) of the FASB Accounting Standards Codification.

Note 16. Segment Information, page F-27

63. We note your disclosure of revenues by geographic area. Specifically, we see that you have grouped your revenue into North America and rest of world. In accordance with paragraph 280-10-50-41(a) of the FASB Accounting Standards Codification, please revise your filing to separately present revenues from external customers attributed to your country of domicile.

64. Please also revise to disclose separately, to the extent material, any revenue from your external customers attributed to an individual foreign country. Refer to the guidance in paragraph 280-10-50-41(a) of the FASB Accounting Standards Codification.

Exhibits

65. We note that several material agreements appear to be missing from your exhibit index. For instance, we note that you have omitted certain related party agreements, your agreements with single source suppliers Katcheco, Inc. and Coastline International, and the financing agreements related to the convertible notes and stockholder note referenced on page 80. Please revise your exhibit index and file all exhibits in your next amendment.

Exhibit 23.2

66. To the extent there is a delay in requesting effectiveness of your registration statement, an other than typographical change made to the financial statements, or there have been intervening events since the prior filing that are material to the company, please provide a currently dated and signed consent from your independent accountants with your next amendment.

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 the information the Securities Act of 1933 and all applicable Securities Act rules require. 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 you request acceleration of the effective date of the pending registration statement please provide a written statement from the company 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.

Please refer to Rules 460 and 461 regarding requests for acceleration. 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. Please allow adequate time for us to review any amendment prior to the requested effective date of the registration statement.

You may contact Tara Harkins at 202-551-3639 or Kevin Vaughn, Accounting Branch Chief, at 202-551-3643 if you have questions regarding comments on the financial statements and related matters. Please contact Jay Mumford at 202-551-3637 or Daniel Morris, Special Counsel, at 202-551-3314 with any other questions.

Sincerely,

/s/ Dan Morris for

Amanda Ravitz
Assistant Director

cc (via e-mail): Jeffery C. Thacker, Esq.