

Mail Stop 4561

June 8, 2006

Matthew Foster  
Ascent Solar Technologies, Inc.  
8120 Shaffer Parkway  
Littleton, CO 80127

**RE: Ascent Solar Technologies, Inc.  
Registration Statement on Form SB-2/A  
File No. 333-131216  
Amendment Filed on May 26, 2006**

Dear Mr. Foster:

We have reviewed your filing and have the following comments. Where indicated, we think you should revise your document in response to these comments.

General

1. Please provide the disclosure required by Item 502(b) of Regulation S-B.

Risk Factors, page 5

“We will have broad discretion in using the proceeds from this offering”, page 12

2. We note the disclosure in the narrative. Please be advised that you may change the use of proceeds provided such reservation is due to certain contingencies that are specifically discussed and the alternatives to such use are indicated. Refer to Instruction 7 to Item 504 of Regulation S-K for guidance. Revise your disclosure accordingly.

Options Exercises and Holdings, page 43

3. We note that in lieu of using the mid-point of your offering price range, you used the fair market value that you used for accounting purposes. Please identify the persons who determined this per share value and describe the methodology used

to calculate the value of each share in reasonable detail. This reasonably detailed methodology should be provided with respect to each date for which the share price values are used in computing the option values. Alternatively, we suggest that you use the mid-point of the offering price range in computing the option values presented in the option grant and option year-end value tables. Using the mid-point of the offering price in computing these columns will provide information that is informative to investors, as they will more readily understand the impact of the offering on the holders of the options.

4. In responding to the foregoing comment, if you elect to use prices other than the mid-point of the offering price range, note that the information concerning how you determined the prices used will be required for the share valued on each option grant date and for the share value at the at the end of the most recent fiscal year. In particular, the table on page 43 should be amended to use a share valued determined as of December 31, 2005, rather than “the date the options were granted”, unless you use the mid-point of the offering price range.

#### Related Party Transactions, page 46

5. Please disclose your response to comment 16 of our letter dated May 19, 2006.

#### Shares Eligible for Future Sale, page 53

6. Please expand the paragraph under the heading “Bridge Rights” to state the transaction that the referenced registration statement would register, which appears to be the resale of those units.

#### Critical Accounting Policies

#### Stock Based Compensation, page 22

7. Please refer to our prior comment 9 of our letter dated May 19, 2006. We have reviewed your response and note that you believe that the \$3.00 conversion price of your bridge loan issued on January 18, 2006 did not include a beneficial conversion feature. However, it is not clear from your response why you believe a beneficial conversion feature is not included in the conversion price other than the large spread between the 10% interest rates and the 7% prime rate. In this regard, it appears that as a result of the amount allocated to the bridge loan and the bridge rights, based on the relative fair value of each, the effective conversion price would be approximately \$1.50 per share and as a result, the conversion price does not appear to provide support for your conclusion that the fair value of the common stock at that time was \$3.00. Refer to Issue 1 of EITF 00-27. As a result, tell us how you considered the valuation approaches noted in Chapter 6 of the AICPA Practice Aid “Valuation of Privately-Held-Company Equity Securities Issued as Compensation” in determining fair value of your common stock. Also,

- when you have determined the fair value of the Company's common stock at the time of the bridge financing based on this guidance, then reconcile such value to the mid-point of the IPO price range of \$5.50 as the bridge financing occurred within 5-days of the Company filing your Form SB-2.
8. Based on your response to the previous comment, we believe that your Critical Accounting Policies and Estimates discussion of stock based compensation should be significantly enhanced to include a discussion of the specific valuation methods used to determine the fair value of the Company's common stock on November 2, 2005, November 18, 2005, January 18, 2006 and January 27, 2006 – through the date of your response.
  9. Please refer to our prior comments 10 and 11 of our letter dated May 19, 2006. We note in your response that warrants normally begin trading at about 20% of the price of a share of common stock and that based on an informal survey of initial public offerings where similar “units” are offered, the warrants, once the unit is broken up, would trade at \$0.50 and \$0.75 per warrant. It remains unclear how you determined that the trading price of other companies' warrants and this informal survey supports your assessed fair value of your common stock. Similar to the previous comment, tell us how you considered the valuation approaches noted in Chapter 6 of the AICPA Practice Aid “Valuation of Privately-Held-Company Equity Securities Issued as Compensation” in determining fair value of your common stock. If a true market approach was used to fair value the warrants, then tell us the specific factors that were used in selecting the comparable companies and tell us which companies were used in your survey and how you determined the fair value of your warrants based on this information.
  10. You also indicate that there is a very “remote possibility” that the holders will never be able to exercise the warrants and will never receive shares or payment of cash in settlement of the warrants. You appear to attribute this statement to the fact that Paulson Investment Company has never underwritten offerings in which the warrant holders were unsuccessful in exercising their warrants. It is not clear how the underwriters would factor into the warrant holders ability to exercise the warrants. The fact remains that the Company will be required to timely file updates to its registration statement and deliver a current prospectus at the time such warrants are exercised and therefore, it appears that the warrant holders ability to successfully exercise their warrants is based on your ability to timely file. You have previously indicated if the Company is not current in their filings and therefore cannot deliver shares that comply with the Securities law, then you will not be obligated to honor the warrant holders request to exercise. Please explain and tell us how you factored the Company's responsibilities in supporting the valuation of your warrants.

Matthew Foster  
Ascent Solar Technologies, Inc.  
June 8, 2006  
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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 supplemental 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.

You may contact at Patrick Gilmore at (202) 551-3406 if you have questions regarding comments on the financial statements and related matters. Questions on other disclosure issues may be directed to Jay Ingram at (202) 551-3397. If you require further assistance, please contact me at (202) 551-3462, or the Assistant Director, Barbara C. Jacobs at (202) 551-3735.

Sincerely,

Mark P. Shuman  
Branch Chief

cc. Mark A. von Bergen *via telecopier*  
(503) 241-8014