



DIVISION OF
CORPORATION FINANCE

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

January 13, 2012

Via E-Mail

Gary Gatchell
Chief Financial Officer
Ascent Solar Technologies, Inc.
12300 North Grant Street
Thornton, Colorado 80241

**Re: Ascent Solar Technologies, Inc.
Registration Statement on Form S-3
Filed December 29, 2011
File No. 333-178821**

Dear Mr. Gatchell:

We have limited our review of your registration statement to those issues we have addressed in our 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. Where 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 your amendment to your registration statement and the information you provide in response to these comments, we may have additional comments.

Prospectus Cover Page

1. It appears that you are relying on General Instruction I.B.6 to use Form S-3. If so, please provide the disclosure required by Instruction 7 to that General Instruction. Otherwise, please provide us your analysis demonstrating your eligibility to use Form S-3.

Prospectus Summary, page 1

2. Please prominently disclose in your prospectus summary your accumulated deficit and history of net losses, and include a comparison of your net loss for the nine-month period ended September 30, 2011 with your net loss for the same period ended September 30, 2010. Further, please highlight the effect on your business of the market conditions and industry trends that impact your business. For example, we note that you cited the "recent significant adverse changes in market conditions, particularly the decreases in current and expected average selling prices for PV modules" in determining to record an

impairment in Property, Plant and Equipment during the period ended June 30, 2011.
Finally, please briefly describe your internal and external sources of liquidity.

We urge all persons who are responsible for the accuracy and adequacy of the disclosure in the filing to be certain that the filing include 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 a 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.

Please contact Mary Beth Breslin at (202) 551-3625 or me at (202) 551-3617 with any questions.

Sincerely,

/s/ Russell Mancuso

Russell Mancuso
Branch Chief

cc (via e-mail): James Carroll (Faegre & Benson LLP)