



DIVISION OF
CORPORATION FINANCE

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

October 11, 2011

Via E-mail

David Lazovsky
President and Chief Executive Officer
Intermolecular, Inc.
3011 N. First Street
San Jose, CA 95134

**Re: Intermolecular, Inc.
Amendment No. 2 to Registration Statement on Form S-1
Filed September 30, 2011
File No. 333-175877**

Dear Mr. Lazovsky:

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.

Prospectus Summary, page 1

1. Please include the disclosure required by Regulation S-K Item 101(c)(1)(vii) or expand your response to prior comment 1 to clarify why you are not required to specifically identify the customers that represent 10 percent or more of your revenue.

Consolidated Financial Statements

Note 9. Net Loss per Share of Common Stock, page F-31

2. We refer to prior comment 7. We do not see where you disclosed, consistent with your response, your basis for reflecting the pro forma adjustments.

Note 11. Related Party Transactions, page F-35

3. With reference to the first paragraph of this note, please disclose where you reflected the royalty expenses in your consolidated statements of operations.

Note 13. Subsequent Events, page F-37

4. Further to your response to prior comment 39, please reconcile your statement indicating Symyx is an investor in the company that owns approximately 8.7% of the company voting interest to your disclosure under Certain Relationships and Related Party Transactions – Symyx, page 128, which indicates Symyx is a beneficial owner of approximately 10.9% of your common stock.
5. Please tell us how you considered the disclosures required by ASC 850-10-50 related to your existing license agreement with this related party. Please tell us why Symyx Technologies is a related party and summarize the terms of the agreement in your response. Please tell us the amount of royalty expenses for each period presented and where you have included the royalty expenses in your consolidated statements of operations.
6. Based upon the current offering price range, please tell us how much you estimate you will owe Symyx Technologies under the note payable. Discuss your consideration of including the acquisition of the assets and the issuance of the note payable in your pro forma information in the Summary Consolidated Financial Data on page 9 and Capitalization on page 37 and also including pro forma statements of operations information.
7. We note from your response that you intend to account for the asset purchase agreement by establishing a liability for the fair market value of the right given to Symyx to sell their shares in the initial public offering with guaranteed minimum proceeds of \$67 million. You responded that the right represents a contingent cash-settled written put option since the company will not acquire the underlying shares, but rather is obligated to make a payment to the counterparty (Symyx) for 50% of their selling costs and for any shortfall in proceeds received from others (the underwriters) and the Company believes that the put feature qualifies as a liability under ASC 480-10-25-8 since it is an instrument that is cash-settled and indexed to an obligation to repurchase stock. Please discuss further why you believe that the company has a liability as of the date of the agreement which we note is prior to the date of closing of the purchase. We further note that the asset purchase is contingent upon consummation of the IPO and Symyx selling all of its shares in the IPO and receiving the net proceeds (net of selling expenses) from the sale of those shares in the IPO and that the company has the sole and absolute right to determine whether to initiate a registration for an IPO and to terminate or withdraw any such registration. Discuss your consideration of ASC 805-50-30, ASC 350 and ASC 450.

8. Further, please tell us how you determined that the initial fair value of the right is approximately \$3.0 million.

Item 16. Exhibits and Finance Statement Schedules

9. We note your disclosure on page 111 that you intend to enter into a Change of Control Severance Agreement with each of your named executive officers effective upon the closing of your offering. Please file the agreement with each named executive officer, or a form of those agreements, as an exhibit to your registration statement prior to requesting acceleration of effectiveness.

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 Dennis Hult at (202) 551-3618 or Kaitlin Tillan at (202) 551-3604 if you have questions regarding comments on the financial statements and related matters. Please

David Lazovsky
Intermolecular, Inc.
October 11, 2011
Page 4

contact Louis Rambo at (202) 551-3289 or Tim Buchmiller, reviewing attorney, at (202) 551-3635 with any other questions.

Sincerely,

/s/ Tim Buchmiller for

Amanda Ravitz
Assistant Director

cc (via e-mail): Patrick A. Pohlen, Esq.
Latham & Watkins LLP