

Mail Stop 4561

August 11, 2009

Isy Goldwasser  
Chief Executive Officer  
Symyx Technologies, Inc.  
1263 East Arques Avenue  
Sunnyvale, CA 94085

**Re: Symyx Technologies, Inc.  
Form 10-K for the Fiscal Year Ended December 31, 2008  
Filed March 13, 2009  
Form 10-Q for the Fiscal Quarter Ended March 31, 2009  
Filed May 8, 2009  
Form 10-Q for the Fiscal Quarter Ended June 30, 2009  
Filed August 7, 2009  
File No. 000-27765**

Dear Mr. Goldwasser:

We have reviewed the above-referenced filings and have the following comments. If indicated, we think you should revise your document in response to these comments. If you disagree, we will consider your explanation as to why our comment is inapplicable or a revision is unnecessary. Please be as detailed as necessary in your explanation. In some of our comments, we may ask you to provide us with supplemental information so we may better understand your disclosure. After reviewing this information, we may raise additional comments.

Please understand that the purpose of our review process is to assist you in your compliance with the applicable disclosure requirements and to enhance the overall disclosure in your filing. We look forward to working with you in these respects. We welcome any questions you may have about our comments or any other aspect of our review. Feel free to call us at the telephone numbers listed at the end of this letter.

Form 10-K for the Fiscal Year Ended December 31, 2008

Item 1. Business

General

1. We note your risk factor disclosure on page 12 stating that the fourth quarter has historically been your strongest quarter, and we further note the reference on page

43 to “the seasonality of [y]our business.” As it appears that the seasonal nature of your business may be material, please advise why you have not provided in the Business section the disclosure called for by Item 101(c)(1)(v) of Regulation S-K.

Competition, page 8

2. You have identified several competitors in the markets in which you compete, and disclosed certain factors in each market with respect to which you believe Symyx competes favorably. In future filings, please expand your disclosure as necessary to include all principal methods of competition (*e.g.*, price, service, warranty or product performance), and to discuss any negative factors pertaining to your competitive position. See Item 101(c)(1)(x) of Regulation S-K.

Item 1A. Risk Factors

“We depend on a limited number of suppliers....” page 20

3. You state that key parts of your tools are available only from a single or limited number of suppliers, and that delays in supplies from these vendors would materially and adversely affect your business. We note also the general disclosure on page 6 regarding your reliance on third-party manufacturers and suppliers for the majority of your tool components. Please elaborate on the nature of your dependence on, and the material terms of your agreements with, these suppliers; and advise what consideration you gave to identifying in your filing any material suppliers to the company. In addition, we note that you do not appear to have filed as exhibits to your Form 10-K any agreements with third-party suppliers. Please provide us with your analysis as to how you concluded you are not required by Item 601(b)(10)(ii)(B) of Regulation S-K to file your agreements with any limited-source suppliers of key components of your products.

Item 7. Management’s Discussion and Analysis of Financial Condition and Results of Operation

Critical Accounting Policies

Goodwill, Intangible Assets and Other Long-Lived Assets, page 34

4. We note you incurred significant impairment charges during the fourth fiscal quarter of 2008. Please tell us what consideration you gave to providing quantitative and qualitative disclosure of the sensitivity of your goodwill and long-lived asset valuations to changes in your methodologies or assumptions. See Section V of SEC Release 33-8350.

Item 8. Financial Statements and Supplementary Data

Note 1. Summary of Significant Accounting Policies

Revenue Recognition, page 56

5. We note in your disclosure that for arrangements that require significant production, modification, or customization of your software where such services are considered essential to the software's functionality, you appear to be using the completed-contract method for revenue recognition. If that is the case, tell us the facts and circumstances related to these arrangements that you considered in determining that this method of accounting is appropriate, including your consideration of paragraphs 31 through 33 of SOP 81-1. In your response, for arrangements that include acceptance provisions as noted in your disclosure, tell us your consideration of SAB Topic 13.A.3.b. and TPA 5100.67. Additionally, for arrangements that include post-contract support (PCS), tell us whether you have established vendor-specific objective evidence (VSOE) of PCS and your consideration of TPA 5100.49.
6. Please tell us where you classify revenues and related costs related to arrangements that require significant production, modification, or customization of your software in your Consolidated Statements of Operations. If you classify these revenues and related costs within a single line item or allocate between products and services, please explain your basis of presentation, why you believe such presentation is reasonable and confirm to us that this presentation has been consistently applied. Assuming that your presentation of revenues and cost of revenues is considered reasonable for purposes of complying with Rule 5-03(b)(1) and (2) of Regulation S-X, please ensure that your MD&A, Critical Accounting Policies and Estimates and footnote disclosures include a discussion of your basis of presentation and discuss the reasons for such presentation.
7. We note in your disclosure related to software license and database content fees that you enter into multiple element arrangements that include multiple products and/or services. We also note that you allocate revenue among each element based on VSOE of fair value (determined by the sales price when each element is sold separately) and if the fair value of all elements have not been determined, revenue is allocated using the residual method. Please explain your methodology and assumptions used to determine VSOE of fair value for each element in your multiple element arrangements. In your response, as it relates to PCS, describe the process you use to evaluate the various factors that affect your establishment of VSOE of fair value. For instance, does the price charged for the PCS vary from customer to customer? If so, please explain how you determined that you can reasonably estimate the fair value of PCS. In this regard, if your agreements include stated future renewal rates, tell us what percentage of your customers

actually renew at these stated rates and provide the range of typical renewal rates that are stated in your contracts. If stated future renewal rates are not included in your agreements, tell us the percentage range allowed for your pricing of PCS that you consider to be representative of VSOE and how you considered the guidance in paragraphs 10 and 57 of SOP 97-2.

8. We note that for multi-year licensing arrangements, revenue is deferred and recognized as revenue ratably over the coverage period. We also note that certain multi-year software licensing arrangements include rights to receive future versions of software products on a when-and-if-available basis. For multi-year licensing arrangements that do not include rights to receive future versions of software products on a when-and-if-available basis, clarify why revenue is being recognized over the coverage period.

Note 2. Research and Development Arrangements, page 64

9. Help us better understand your revenue recognition policy related to your research and development arrangements. In this regard, we note that your major collaboration arrangements appear to include multiple elements that include software licenses, PCS and services. Clarify the terms of these arrangements and tell us how you accounted for each element, including whether the fair value of each element has been established, as well as the accounting literature relied on.

Item 9A. Controls and Procedures

Evaluation of Disclosure Controls and Procedures, page 82

10. You state that your chief executive officer and chief financial officer concluded that, as of December 31, 2008, your “disclosure controls and procedures were effective, at a reasonable assurance level, to ensure that the information required to be disclosed by [you] in reports [you] file with the SEC is recorded, processed, summarized and reported within the time periods specified in the SEC’s rules and instructions for such reports.” These effectiveness conclusions are stated in terms that are more limited in scope than the definition of “disclosure controls and procedures” as set forth in Exchange Act Rule 13a-15(e), which we note you have provided in full in the second paragraph of this section. In your response letter, please confirm, if true, that your officers evaluated and concluded that as of December 31, 2008, your disclosure controls and procedures were also effective to ensure that information required to be disclosed in the reports that you file or submit under the Exchange Act is accumulated and communicated to your management, including your chief executive officer and chief financial officer, as appropriate to allow timely decisions regarding required disclosure. In future filings, to the extent you include a definition of disclosure controls and procedures

in your effectiveness conclusions, please include the entire definition as set forth in Exchange Act Rule 13a-15(e).

Item 11. Executive Compensation (incorporated from Definitive Proxy Statement on Schedule 14A, filed on April 29, 2009)

Compensation Discussion and Analysis

Setting Executive Compensation, page 19

11. You disclose that your compensation committee engages in benchmarking certain elements of executive compensation against compensation data from peer companies. We note further that you have identified in your filing certain companies that make up a “representative subset of the Compensation Peer Group.” Please identify all of the component companies against whom you benchmark executive compensation; or advise. See Item 402(b)(2)(xiv) of Regulation S-K.
12. You state that “the Compensation Committee generally sets compensation for executive officers at the 75<sup>th</sup> percentile of the base salary and target cash incentive compensation paid to similarly situated executives of the organizations comprising the Compensation Peer Group.” Please disclose where actual payments fall relative to the targeted percentile for each applicable element of compensation for each of your named executive officers.

2008 Executive Compensation Components

Short-Term Cash Incentive Compensation Awards, page 21

13. You disclose that you rely in part on non-GAAP financial measures of revenue, operating income, and earnings per share as targets in determining incentive compensation for your named executive officers. Please explain briefly in future filings how each of these measures is calculated from your audited financial statements. Refer to Instruction 5 to Item 402(b) of Regulation S-K.

Discretionary Cash Bonuses, page 22

14. Please expand your disclosure regarding the discretionary bonuses awarded to certain of your named executive officers in 2008 to provide a materially complete analysis of the specific factors considered by the compensation committee in awarding these bonuses. You refer generally to the recipient named executive officers’ “contributions in 2008 based upon the Compensation Committee’s assessment of their individual performance against their documented goals for the fiscal year;” but you do not provide adequate qualitative or quantitative disclosure

of the contributions or the documented goals that the committee considered in determining to award the bonuses; nor do you describe the reasons the committee believes the amounts paid to each named executive officers are appropriate in light of the various items it considered in awarding discretionary bonuses.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters (incorporated from Definitive Proxy Statement on Schedule 14A, filed on April 29, 2009)

Review, Approval or Ratification of Transactions with Related Persons, page 37

15. The disclosure in this section appears limited to your policies relating to future transactions with related persons, as opposed to your historical policies. For example, you state that it is your policy that “future transactions with affiliates... will be on terms no less favorable to [you] than [you] could have obtained from unaffiliated third parties,” and that your audit committee “will review and approve any transactions required to be disclosed pursuant to SEC Regulation S-K, Item 404.” Please confirm, if accurate, that the policies described in your filing have been in place since at least the beginning of your fiscal year 2008, and revise your disclosure in future filings as appropriate. Please also confirm, if accurate, that all transactions required to be reported under Item 404(a) since the beginning of your fiscal year 2008 were reviewed and approved pursuant to your policies; or provide the disclosure called for by Item 404(b)(2) of Regulation S-K.

Form 10-Q for the Fiscal Quarter Ended March 31, 2009

Note 2. Stock-Based Benefit Plans, page 9

16. We note in your disclosure that you have granted restricted stock and restricted stock units to your employees and members of the Board of Directors. Tell us whether the holders of unvested restricted stock and restricted stock units have nonforfeitable rights to dividends or dividend equivalents. In this regard, clarify whether you consider these awards to be participating securities that should be included in your computation of earnings per share under the two-class method. Refer to FSP EITF 03-6-1.

Form 10-Q for the Fiscal Quarter Ended June 30, 2009

Exhibits 31.1 and 31.2, Certifications

17. We note here and in your prior Form 10-Q for the fiscal quarter ended March 31, 2009, that the identification of the certifying individual at the beginning of each of the certifications required by Exchange Act Rule 13a-14(a) includes the title of the certifying individual. Please note that the language of the certifications

required by Item 601(B)(31) of Regulation S-K must be provided exactly as stated therein. In future filings, please do not include the person's title in the identification of the certifying individual at the beginning of each certification.

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Please respond to these comments within 10 business days or tell us when you will provide us with a response. Please submit all correspondence and supplemental materials on EDGAR as required by Rule 101 of Regulation S-T. If you amend your filings, you may wish to provide us with marked copies of any amendment to expedite our review. Please furnish a cover letter that keys your response to our comments and provides any requested information. Detailed cover letters greatly facilitate our review. Please understand that we may have additional comments after reviewing any amendment and your response to our comments.

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 all information required under the Securities Exchange Act of 1934 and that they have provided all information investors require for an informed investment decision. 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.

In connection with responding to our comments, please provide, in writing, a statement from the company acknowledging that:

- the company is responsible for the adequacy and accuracy of the disclosure in the filing;
- 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
- 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.

In addition, please be advised that the Division of Enforcement has access to all information you provide to the staff of the Division of Corporation Finance in our review of your filing or in response to our comments on your filing.

Isy Goldwasser  
Symyx Technologies, Inc.  
August 11, 2009  
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You may contact Jennifer Fugario, Staff Accountant, at (202) 551-3482 if you have any questions regarding comments on the financial statements and related matters. Please address questions regarding all other comments to Katherine Wray, Staff Attorney, at (202) 551-3483 or Mark P. Shuman, Branch Chief – Legal, at (202) 551-3462. If you need further assistance, you may contact me at (202) 551-3406.

Sincerely,

Patrick Gilmore  
Accounting Branch Chief