

January 3, 2008

Mail Stop 6010

Frank H. Laukien, Ph.D.  
Chairman, President and Chief Executive Officer  
Bruker BioSciences Corporation  
40 Manning Road  
Billerica, MA 01821

**Re: Bruker BioSciences Corporation  
Preliminary Proxy Statement on Schedule 14A  
Filed December 11, 2007  
File No. 000-30833**

Dear Dr. Laukien:

We have limited our review of your filing to those issues we have addressed in our comments. Where 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 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.

Summary Term Sheet, page 1

1. Please expand the last bullet point on page 2 to disclose that Dirk Laukien is one of the two candidates for election to your board.

Q: What stockholder approvals are needed . . .?, page 4

2. Please revise to clarify, if true, that under the terms of the transaction agreements the requirement to obtain the affirmative vote of a majority of shares held by persons unaffiliated with the Laukien family may be waived by the parties. Please also disclose the registrant's intent in this regard if a majority of unaffiliated shareholders do not approve the transaction.

Interests of Directors and Executive Officers in the combination, page 10

3. Expand to quantify the benefits to be received by each of the Laukien family members who are also officers and/or directors of the registrant and the Laukien family members as a whole.

Some directors and executive officers . . . , page 20

4. We note the last sentence of this risk factor. It is unclear why the conflicts of interest of the Laukien family are relevant to shareholders' consideration of the recommendations of the special committee and the board, given your disclosure that each body consisted solely of directors who were independent of the Laukien family when the transactions were negotiated and voted upon. Do you mean that shareholders should consider these interests and how they may diverge from their own in determining whether to approve the acquisitions? Please revise to clarify the risk presented to your investors.

Background of the Combination, page 27

5. We note that your disclosure in this section does not describe how the total value and form of the consideration to be issued was determined. For example, you refer to preliminary or proposed valuations from at least September 19 through October 9, 2007 without identifying the amounts and forms of consideration proposed by each party. Please expand to disclose the specific amounts and forms of each type of consideration proposed by the parties during the negotiations.
6. We note your disclosure on page 68 that prior to signing the acquisition agreement, Bruker BioSpin declared a cash dividend that will be paid to the Laukien family regardless of whether or not the acquisitions close. Disclose whether this dividend factored into the negotiations regarding the consideration to be paid and, if so, provide more detailed information regarding how the amount of such dividend was determined.
7. We note that according to your Form 8-K filed on December 3, 2007, the members of the special committee and Bruker BioSciences entered into a compensation and indemnification agreement pursuant to which they received cash fees for their service. Please provide, with a view toward disclosure in your proxy statement, a discussion of why this compensation agreement was entered into the same day the acquisition agreements were finalized.
8. Please expand the disclosure in an appropriate section of your document to provide the information required by section 1005(b) of Regulation M-A with respect to your acquisition of Bruker Optics during 2006.

9. We note your disclosure in the carryover paragraph on page 28 that Dr. Laukien would support all parties in a neutral fashion but would not be negotiating on behalf of either party. However, it appears from your subsequent disclosures on pages 29 through 30 that Dr. Laukien discussed with members of the special committee the proposed valuation of Bruker BioSpin. We note, for example, your disclosures regarding the events of September 30, October 2 and 4, 2007. Please revise to clarify the nature and extent of Dr. Laukien's involvement in these discussions.

Compensation Discussion and Analysis, page 129

10. Revise to update the disclosure required by Items 402 and 404 of Regulation S-K to include the compensation for your most recently completed fiscal year.

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As appropriate, please amend your filing and respond to these comments within 10 business days or tell us when you will provide us with a response. 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 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.

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

Frank H. Laukien, Ph.D.  
Bruker BioSciences Corporation  
January 3, 2008  
Page 4

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.

You may contact Geoffrey Kruczek at (202) 551-3641 or me at (202) 551-3800 with any questions.

Sincerely,

Peggy Fisher  
Assistant Director

cc (via fax): Richard Stein, Esq.—Nixon Peabody LLP