

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today  
(1) was not written for publication in a law journal and  
(2) is not binding precedent of the Board.

Paper No. 20

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte YOAV BARSHAD and  
YAEL BARSHAD

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Appeal No. 96-1625  
Application 08/096,106<sup>1</sup>

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ON BRIEF

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Before HAIRSTON, KRASS, and BARRETT, Administrative Patent  
Judges.

HAIRSTON, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1  
through 14. In an Amendment After Final (paper number 9),

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<sup>1</sup> Application for patent filed July 22, 1993.

claims 1 and 2 were amended.<sup>2</sup>

The disclosed invention relates to a spectrometer that includes a fiber optic bundle that receives light from a light source. The other end of the fiber optic bundle is split into a first leg and into a second leg, with the first leg having more fibers than the second leg. The second leg is longer than the first leg to compensate for attenuation losses in the first leg.

Claim 1 is the only independent claim on appeal, and it reads as follows:

1. A spectrometer comprising:

a light source;

a fiber optic bundle which splits into a first leg and a second leg, with said first leg having more fibers than said second leg and with one end of said fiber optic bundle positioned to receive light from said light source which is guided down said first and second legs as first and second light beams, respectively;

transmissive means for holding a sample, with said transmissive means positioned to receive the first light beam output by the end of said first leg;

means for dispersing the first and second light

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<sup>2</sup> According to the examiner (paper number 10), the amendment had the effect of overcoming the indefiniteness rejection of claims 1 through 14.

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beams;

means for focusing the first and second light beams output from said transmissive means and said second leg, respectively, onto said means for dispersing;

means for simultaneously detecting the first and second light beams from said means for dispersing; and

means for reading data from said means for detecting.

The references relied on by the examiner are:

Lee 1984	4,449,821	May 22,
Smith 1985	4,545,680	Oct. 8,
Mächler 1987	4,709,989	Dec. 1,
Lequime et al. (Lequime) 19, 1988	4,758,085	July
Imahashi et al. (Imahashi) 1989	4,844,611	July 4,
Ando 10, 1992	5,162,868	Nov.
Landa et al. (Landa) 1993	5,210,590	May 11,
Birang et al. (Birang) 1993	5,212,537	May 18,
Silvergate et al. (Silvergate) 1993	5,231,461	July 27,
		(filed Dec. 9, 1991)

Claims 1 through 4 and 14 stand rejected under 35 U.S.C.

§ 103 as being unpatentable over Lequime in view of Landa, Birang and Smith.

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Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over Lequime in view of Landa, Birang, Smith and Ando.

Claims 6 and 7 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lequime in view of Landa, Birang, Smith, Ando and Imahashi.

Claim 8 stands rejected under 35 U.S.C. § 103 as being unpatentable over Lequime in view of Landa, Birang, Smith, Ando, Imahashi and Lee.

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Claims 9 through 11 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lequime in view of Landa, Birang, Smith, Ando, Imahashi, Lee and Silvergate.

Claims 12 and 13 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lequime in view of Landa, Birang, Smith, Ando, Imahashi, Lee, Silvergate and Mächler.

Reference is made to the briefs and the answer for the respective positions of the appellants and the examiner.

#### OPINION

The obviousness rejection of claims 1 through 14 is reversed.

Lequime discloses a spectrometer (Figure 1) in which light from a light source 36 travels via an optical fiber 38 and Y-coupler 40 to two different light paths. One of the paths is a reference light path 32, and the other path serves as a light to illuminate object 44. The light reflected from object 44, and the reference light in path 32 input the spectrometer 14 via connectors 30, shutters 34, optical fibers 28 and inlet slot 16.

Landa teaches that in a spectrographic analyzer "[t]he light transmitted through the sample, reflected from the

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sample, or both is then collected and analyzed" (column 1, lines 17 through 19).

The Abstract of Birang discloses the following:

A photometer [14] having a plurality of input fibers to its optical entrance [16], at least one [78] of which is for transmission of calibration light and at least one [77] of which is for transmission of sample light. The exit ends of these fibers are aligned into a linear array [Figures 7B, 7E and 8A], thereby producing an effective entrance slit for the optical entrance of the photometer. The fiber(s) for calibration light are positioned at the center of the linear array to avoid miscalibration due to photometer astigmatism.

Smith discloses a chopperless spectroanalytical system (Figure 1) that teaches simultaneous detection of a sample beam 14 and a reference beam 34. The two beams are "concurrently monitored and compared to compensate for errors due to source fluctuations and the like" (column 1, lines 49 through 51).

The examiner is of the opinion that the fiber 38 and the Y-coupler 40 of Lequime are a fiber optic bundle that is split into a first leg and into a second leg (Answer, pages 3 and 11). The examiner is also of the opinion that it would have been obvious to one of ordinary skill in the art to use the fiber optic bundle teachings of Birang in Lequime to

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provide for more fibers in one light path than in the other light path to thereby compensate for attenuation losses (Answer, pages 5 and 11). With respect to the reflected light from the sample 44 in Lequime, the examiner concludes (Answer, page 5) that "it is well known in the art of spectroscopy to substitute a reflected sample system with a transmissive sample system as taught by Landa." According to the examiner (Answer, pages 5 and 11), it is well known in the art to replace a chopper system with a chopperless system such as the one disclosed by Smith "since the . . . simultaneous detection of reference and sample . . . provides for a more accurate measurement . . . in that analysis of the reference and sample simultaneously compensates for errors due to source fluctuations."

We agree with the examiner that the skilled artisan would have known to switch between a reflected system and a transmissive system based upon the characteristics of the sample being analyzed. We also agree with the examiner that the skilled artisan would have appreciated that the two beams in Lequime should be concurrently monitored and compared to compensate for errors due to source fluctuations. On the

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other hand, we do not agree with the examiner that the optical fiber 38 and the Y-coupler 40 in Lequime operate together as a fiber optic bundle with split legs as claimed. Appellants have correctly argued (Reply Brief, page 2) that "Birang et al. does not teach or suggest a fiber optic bundle which splits into first and second legs and instead only discloses connecting the exit ends of two separate optical cables 77 and 78 into a single fitting 71 for an entrance slit 16 to a monochromator." Thus, we agree with appellants (Reply Brief, page 2) that "the Examiner has failed to show any motivation to combine Birang et al. with Lequime et al." (Reply Brief, page 2), and "[t]here is, therefore, simply no basis to combine the two references" (Reply Brief, page 3).

Based upon the foregoing, the obviousness rejection of claims 1 through 4 and 14 is reversed.

The obviousness rejection of claims 5 through 13 is reversed because none of the teachings of Ando, Imahashi, Lee, Silvergate and Mächler can cure the noted shortcoming in the combined teachings of Lequime, Landa, Birang and Smith.

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DECISION

The decision of the examiner rejecting claims 1 through  
14 under 35 U.S.C. § 103 is reversed.

REVERSED

KENNETH W. HAIRSTON	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
ERROL A. KRASS	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
	)	
	)	
LEE E. BARRETT	)	
Administrative Patent Judge	)	

KWH:svt

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