

**IN THE UNITED STATES DISTRICT COURT FOR THE
DISTRICT OF DELAWARE**

BECKMAN COULTER, INC.,

Plaintiff,

v.

CYTEK BIOSCIENCES, INC.,

Defendant.

C.A. No. 22-945-CFC-EGT

**REBUTTAL EXPERT REPORT OF FEDOR A. ILKOV, PH.D.
REGARDING NON-INFRINGEMENT OF
U.S. PATENT NOS. 10,330,582; 11,703,443; and 12,174,107**

Dated: January 20, 2026

Respectfully submitted,



Fedor A. Ilkov, Ph.D.

CYTEK V. BECKMAN
PGR2025-00084
BECKMAN 2056

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1. Asserted Claim 4

200. I understand claim 4 of the '443 patent depends from claim 1, and thus includes all elements of claim 1 in addition to the elements of claim 4.

a. 1(a): “A wavelength division multiplexer (WDM) for a flow cytometer comprising:”

201. The claims of the '443 patent recite a “wavelength division multiplexer (WDM).” I note that a wavelength multiplexer combines multiple data streams, each on a different light wavelength (color), into a single optical fiber for transmission, acting on a many-to-one principle. In other words, a multiplexer *adds* signals. A demultiplexer on the other hand, does the opposite and separates wavelengths into

individual data channels, operating on a one-to-many principle allowing increased capacity on a single fiber. In other words, a demultiplexer *separates* signals. These concepts form the core of wavelength division multiplexing.

202. A POSA would understand that a wavelength division multiplexer *multiplexes* wavelengths of light and is the optical component that combines multiple strands of light together. *See e.g.*, Harry Newton, *Newton's Telecom Dictionary: the official dictionary of telecommunications* (1998) (“Newton”) at 497 (“Multiplexer: Electronic equipment which allows two or more signals to pass over one communications circuit”). In contrast, a wavelength division demultiplexer *demultiplexes* wavelengths of light and is the optical component that separates and isolates individual wavelengths of light. *See e.g.*, *id.* at 222 (“Demultiplexer: A device that pulls several streams of data out of a bigger, fatter or faster stream of data.”). In my opinion, this is indisputable, and a POSA would recognize these differences. I understand that Dr. Leary has reached the same conclusion.

203. The Accused Products do not use a wavelength division multiplexer to multiplex light because the optical component in the Accused Products does not multiplex or combine wavelengths of light. Instead, the optical component *demultiplexes* or separates individual wavelengths of light into respective detectors.

204. [REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

206. [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED] Therefore, because the Accused Products do not contain a “wavelength division multiplexer (WDM),” they do not infringe. I understand that Dr. Leary has also concluded that the Accused Products do not use a “wavelength division multiplexer (WDM)” because there is no optical component that multiplexes light.

208. [REDACTED]

b. 1(c): “a wavelength division multiplexer (WDM) configured to receive light form the optical fiber, wherein the WDM comprises:”

253. The claims of the '107 patent recite a “wavelength division multiplexer (WDM).” As discussed above for claim limitation 1(a) of the '443 patent, which I incorporate by reference here, a POSA would understand that a wavelength division multiplexer *multiplexes* wavelengths of light, whereas a wavelength division demultiplexer *demultiplexes* wavelengths of light. For the same reasons as discussed

for claim limitation 1(a) of the '443 patent, the Accused Products do not use a wavelength division multiplexer to multiplex light and thus do not infringe claim 1 of the '107 patent.

c. [REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

[REDACTED]

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

b. 16(b): a flow cell configured to permit liquid to flow through the flow cell; 16(c): a laser configured to project light into the flow cell

264. I have already provided my opinion on the invalidity of terms related to “flow cell” in my opening report, which I incorporate here. (Ilkov Op. Rep., Section XV.G.) In my opinion, the only flow cell supported by the written description is one that includes a composite microscope objective, comprising a concave mirror and an aberration corrector plate. Even if claim 16 is limited to this scope, claim limitation 16(b) is not infringed because the Accused Products lack a flow cell that includes a microscope objective, comprising a concave mirror and an aberration corrector plate.

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED];

267.

268. Dr. Schaafsma's opinion that this claim limitation is infringed, (Schaafsma Rep., ¶¶298-99), is insufficient. Dr. Schaafsma uses the word "flow cell" only once in Section XI of his Report. And just like Dr. Houston, Dr. Schaafsma's report similarly fails to show that the flow cell used in the Accused Products includes a composite microscope objective, comprising a concave mirror and an aberration corrector plate, the only flow cell that is supported by the written description of the '107 patent.

c. 16(d): "a multimode optical fiber configured to receive light from the flow cell; and"

269. I reiterate my opinion regarding the invalidity of the term "flow cell" as explained in my opening report and incorporate here. (Ilkov Op. Rep., Section XV.G.) I also incorporate my discussions regarding non-infringement of claim limitation 16(c) above regarding "flow cell."

270. As I discussed above, the flow cell used in the Accused Products comprises an objective lens between the flow cell and the fiber. Therefore, the optical fiber in the Accused Products is not "configured to receive light from the flow cell," but rather from the objective lens. Dr. Houston concedes that the light travels from the flow cell to the objective lens before being received by the optical fiber.

(Houston Rep., ¶245 (in the Accused Products, “fluorescence emissions *passes through* the objective lens and into the fiber pickup.”) (emphasis added).) The figure that Dr. Houston uses, reproduced below, clearly shows that light from the flow cell passes through the objective lens before entering the fiber.



(Houston Rep., ¶245 (citing CYTEK_0000003882 at -4004; CYTEK_0000002507 at -630).)

271. I disagree with Dr. Houston’s opinion that “Element 16(d) does not require that the multimode fiber receive light directly from the flow cell without any intervening optical elements,” (Houston Rep., ¶247), as a POSA would understand that the fiber receives light directly from the flow cell based on the plain meaning of the claim. In the Accused Products, because light from the flow cell passes through and is manipulated by the intervening objective lens, that light is no longer “light

from the flow cell,” but “light from the objective lens.”

d. 16(e): “a wavelength division multiplexer (WDM) configured to receive light from the multimode optical fiber, wherein the WDM comprises:”

272. . The claims of the '107 patent recite a “wavelength division multiplexer (WDM).” As discussed above for claim limitation 1(a) of the '443 patent, which I incorporate by reference here, a POSA would understand that a wavelength division multiplexer *multiplexes* wavelengths of light, whereas a wavelength division demultiplexer *demultiplexes* wavelengths of light. For the same reasons as discussed for claim limitation 1(a) of the '443 patent, the Accused Products do not use a wavelength division multiplexer to multiplex light and thus do not infringe claim 1 of the '107 patent.

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]