

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

BECKMAN COULTER, INC.,

Plaintiff,

v.

CYTEK BIOSCIENCES, INC.,

Defendant.

Civil Action No. 1:24-cv-00945-CFC

DEMAND FOR JURY TRIAL

**CYTEK BIOSCIENCES, INC.’S
REVISED INITIAL INVALIDITY CONTENTIONS**

In response to the Court’s June 27, 2025 Oral Order (D.I. 101), Defendant Cytek Biosciences, Inc. (“Defendant” or “Cytek”) hereby submits the following Revised Initial Invalidity Contentions (“Invalidity Contentions”) to Plaintiff Beckman Coulter, Inc. (“Plaintiff” or “Beckman Coulter”) regarding claims 1, 3, 6, 15, 17, 18, 20, 21, 23, 25, and 26 of U.S. Patent No. 10,330,582 (the “’582 Patent”); claims 1-4, 6, 7, 10, 11, 15, 17, and 18 of U.S. Patent No. 11,703,443 (the “’443 Patent”); claims 2, 11, 14, and 17 of U.S. Patent No. 12,174,106 (the “’106 Patent”); and claims 1, 3, 5, 7, 9-12, 14, 16-18, 26, 27, 29, and 30 of U.S. Patent No. 12,174,107 (the “’107 Patent”) (collectively, the “Asserted Claims” of the “Asserted Patents”). Cytek submits these Invalidity Contentions in response to Beckman Coulter’s April 2, 2025 Initial Election of Asserted Claims and reserves all rights to amend, modify, and/or supplement the Invalidity Contentions if Beckman Coulter deviates from its Initial Election of Asserted Claims by adding currently unasserted claims.

As set forth herein, each and every claim asserted by Beckman Coulter in this action is

**CYTEK V. BECKMAN
IPR2025-01319
BECKMAN 2009**

invalid on multiple grounds. Voluminous prior art was known in the field prior to the earliest effective priority dates of the asserted patents and claims. Furthermore, to the extent Beckman Coulter argues that its claims are distinct from the prior art based on allegedly narrow points of distinction, then any such alleged distinctions only further minimize any alleged infringement liability that Beckman Coulter seeks in this matter. Nothing in the asserted claims presents any fundamental new advance over the prior art, and any alleged incremental advances were obvious and do not support meritorious litigation claims against Cytek.

Discovery is ongoing and Cytek reserves the right to supplement or modify these Invalidity Contentions as applicable under the Local Rules, the Federal Rules, and the Court's Orders. Cytek further reserves the right to supplement and amend these disclosures and associated document production based on further investigation, analysis, and discovery, information received through third-party discovery (including in response to subpoenas to, *e.g.*, Diasorin, Luminex, RMD, Becton Dickinson), Cytek's consultation with experts and others, and contentions or Court rulings on relevant issues such as claim construction and priority dates. Cytek also reserves the right to amend these Invalidity Contentions and/or to modify its selection of prior art references in the event that Beckman Coulter is permitted to serve supplemental or modified infringement contentions.

The following contentions are based on Cytek's current understanding of the Asserted Claims as applied in Beckman Coulter's Disclosure of Asserted Claims and Infringement Contentions, served on February 14, 2025 (D.I. 50) and narrowed in its Initial Election of Asserted Claims (D.I. 68), without the benefit of completed claim construction. Cytek will provide its claim construction positions at the appropriate time pursuant to the Amended Joint Scheduling Order entered on November 14, 2024. (D.I. 55). Accordingly, these Invalidity Contentions may reflect

various potential and alternative positions regarding claim construction and scope. To the extent these contentions reflect or suggest a particular interpretation or reading of any claim element, Cytek does not adopt or agree to any such interpretation or reading. To the extent the following contentions reflect constructions consistent with or implicit in Beckman Coulter's Initial Infringement Contentions, no inference is intended nor should any be drawn that Cytek agrees with or concedes those claim constructions. Cytek expressly does not do so and reserves its right to contest them.

Nor do these Invalidity Contentions constitute any admission by Cytek that any accused products, including any current or past versions of those products, are covered by any Asserted Claim. Cytek does not take any position herein regarding proper scope or construction of the Asserted Claims. To the extent that prior art cited for a particular limitation discloses functionality or characteristics that are the same or similar in some respects to the alleged functionality and characteristics of the accused products as set forth in Beckman Coulter's Infringement Contentions, Cytek does not concede that those limitations are in fact met by those accused functionalities or characteristics.

Because Cytek is continuing its analysis of relevant prior art, Cytek reserves the right to further revise, amend, and/or supplement the information provided herein, including identifying, charting, and/or relying upon additional prior art references, relevant disclosures, and bases for Invalidity Contentions. Additional prior art, disclosures, and invalidity defects, whether cited in this disclosure and whether known to Cytek, may become relevant as investigation, analysis, and discovery continue. Additionally, Cytek reserves the right to present additional prior art references and/or disclosures under pre-AIA 35 U.S.C. §§ 102(a), (b), (e), (f), and/or (g), and/or § 103, or AIA 35 U.S.C. § 102 and/or § 103, located during the course of such discovery or further

investigation, and to assert invalidity under pre-AIA 35 U.S.C. §§ 102(c), (d), or (f), or AIA 35 U.S.C. § 102, to the extent that such discovery or investigation yields information forming the basis for such invalidity.

Furthermore, to the extent Beckman Coulter asserts the doctrine of equivalents, a “doctrine of equivalents theory cannot be asserted if it will encompass or ‘ensnare’ the prior art.” *Jang v. Boston Sci. Corp.*, 872 F.3d 1275, 1285 (Fed. Cir. 2017). To the extent Beckman Coulter asserts the doctrine of equivalents for any of the claimed limitations, they would ensnare the prior art for the reasons and based on the evidence discussed below and in the accompanying charts. Defendants reserve the right to use these disclosures as well as further discovery and disclosures for purposes of noninfringement.

The Asserted Claims are governed under the Leahy-Smith America Invents Act (“AIA”). According to the Manual of Patent Examining Procedure (“MPEP”) § 2159, “[i]f there is ever even a single claim to a claimed invention in the application having an effective filing date on or after March 16, 2013, AIA 35 U.S.C. §§ 102 and 103 apply in determining the patentability of every claimed invention in the application. This is the situation even if the remaining claimed inventions all have an effective filing date before March 16, 2013, and even if the claim to a claimed invention having an effective filing date on or after March 16, 2013, is canceled.” MPEP § 2159.02. However, Cytek’s analysis applies equally under pre-AIA law.

The Asserted Claims Are Invalid Under 35 U.S.C. §§ 102 and 103¹

A. The Asserted Claims of the ’582 Patent

The non-provisional application leading to issuance of the ’582 Patent was filed on June 30, 2017. The ’582 Patent is a continuation of a non-provisional application, filed on November

¹ While references throughout to 35 U.S.C. §§ 101 *et al.* refer to AIA versions of those statutes, Cytek’s analysis applies equally under pre-AIA versions of the statutes.

26, 2014, which is a continuation-in-part of a PCT application, filed on May 30, 2013. The '582 Patent purportedly claims priority to a series of provisional applications filed between May 30, 2012 and December 4, 2013. Beckman Coulter further alleges in its Initial Infringement Contentions that [t]he inventions claimed in the '582 Patent were conceived no earlier than December 29, 2011, no later than January 5, 2012, or, alternatively, April 18, 2012, or alternatively, June 18, 2012. The inventions claimed in the '582 Patent were reduced to practice no later than September 20, 2012.” The Asserted Claims of the '582 Patent are not presumptively entitled to claim priority to the filing date of its earlier PCT application, the filing date of its provisional applications, or Beckman Coulter’s asserted conception and/or reduction to practice date(s). It is Beckman Coulter’s burden to establish that all of the elements of the Asserted Claims of the '582 Patent have both written description and enablement support in the earlier applications, and it is Beckman Coulter’s burden to establish actual and/or constructive reduction to practice for any priority date it seeks that precedes the filing date of the earliest application for which the '582 Patent may claim priority. Cytek disputes any allegation by Beckman Coulter seeking to claim priority for the Asserted Claims of the '582 Patent to a date other than the filing date of its direct nonprovisional application.

B. The Asserted Claims of the '443 Patent

The non-provisional application leading to issuance of the '443 Patent was filed on November 4, 2022. The '443 Patent is a continuation of a non-provisional application in a series of non-provisional applications, the earliest of which is a November 26, 2014 continuation-in-part of a PCT application, filed on May 30, 2013. The '443 Patent purportedly claims priority to a series of provisional applications filed between May 30, 2012 and December 4, 2013. Beckman Coulter further alleges in its Initial Infringement Contentions that [t]he inventions claimed in the

'443 Patent were conceived no earlier than December 29, 2011, no later than January 5, 2012, or, alternatively, April 18, 2012, or alternatively, June 18, 2012. The inventions claimed in the '443 Patent were reduced to practice no later than September 20, 2012.” The Asserted Claims of the '443 Patent are not presumptively entitled to claim priority to the filing date its earlier PCT application, the filing date of its provisional applications, or Beckman Coulter’s asserted conception and/or reduction to practice date(s). It is Beckman Coulter’s burden to establish that all of the elements of the Asserted Claims of the '443 Patent have both written description and enablement support in the earlier applications, and it is Beckman Coulter’s burden to establish actual and/or constructive reduction to practice for any priority date it seeks that precedes the filing date of the earliest application for which the '443 Patent may claim priority. Cytek disputes any allegation by Beckman Coulter seeking to claim priority for the Asserted Claims of the '443 Patent to a date other than the filing date of its direct nonprovisional application.

C. The Asserted Claims of the '106 Patent

The non-provisional application leading to issuance of the '106 Patent was filed on December 22, 2021. The '106 Patent is a continuation of a non-provisional application in a series of non-provisional applications, the earliest of which is a November 26, 2014 continuation-in-part of a PCT application, filed on May 30, 2013. The '106 Patent purportedly claims priority to a series of provisional applications filed between May 30, 2012 and December 4, 2013. Beckman Coulter further alleges in its Initial Infringement Contentions that [t]he inventions claimed in the '106 Patent were conceived no earlier than December 29, 2011, no later than January 5, 2012, or, alternatively, April 18, 2012, or alternatively, June 18, 2012. The inventions claimed in the '106 Patent were reduced to practice no later than September 20, 2012.” The Asserted Claims of the '106 Patent are not presumptively entitled to claim priority to the filing date its earlier PCT

application, the filing date of its provisional applications, or Beckman Coulter's asserted conception and/or reduction to practice date(s). It is Beckman Coulter's burden to establish that all of the elements of the Asserted Claims of the '106 Patent have both written description and enablement support in the earlier applications, and it is Beckman Coulter's burden to establish actual and/or constructive reduction to practice for any priority date it seeks that precedes the filing date of the earliest application for which the '106 Patent may claim priority. Cytek disputes any allegation by Beckman Coulter seeking to claim priority for the Asserted Claims of the '106 Patent to a date other than the filing date of its direct nonprovisional application.

D. The Asserted Claims of the '107 Patent

The non-provisional application leading to issuance of the '107 Patent was filed on September 3, 2024. The '107 Patent is a continuation of a non-provisional application in a series of non-provisional applications, the earliest of which is a November 26, 2014 continuation-in-part of a PCT application, filed on May 30, 2013. The '107 Patent purportedly claims priority to a series of provisional applications filed between May 30, 2012 and December 4, 2013. Beckman Coulter further alleges in its Initial Infringement Contentions that [t]he inventions claimed in the '107 Patent were conceived no earlier than December 29, 2011, no later than January 5, 2012, or, alternatively, April 18, 2012, or alternatively, June 18, 2012. The inventions claimed in the '107 Patent were reduced to practice no later than September 20, 2012.” The Asserted Claims of the '107 Patent are not presumptively entitled to claim priority to the filing date its earlier PCT application, the filing date of its provisional applications, or Beckman Coulter's asserted conception and/or reduction to practice date(s). It is Beckman Coulter's burden to establish that all of the elements of the Asserted Claims of the '107 Patent have both written description and enablement support in the earlier applications, and it is Beckman Coulter's burden to establish

actual and/or constructive reduction to practice for any priority date it seeks that precedes the filing date of the earliest application for which the '107 Patent may claim priority. Cytek disputes any allegation by Beckman Coulter seeking to claim priority for the Asserted Claims of the '107 Patent to a date other than the filing date of its direct nonprovisional application.

E. Identity of Each Item of Prior Art

Subject to Cytek's reservation of rights, Cytek identifies each item of prior art that anticipates or renders obvious one or more of the Asserted Claims in the attached Prior Art Index submitted herewith. (*See Appendix A, infra.*) To the extent that the references listed in **Appendix A** are not identified as items of prior art that anticipate and/or render obvious an Asserted Claim, Cytek intends to rely on these references as background, as evidence of the state of the art at the time of Beckman Coulter's alleged invention, as demonstrating inherency in the prior art, for motivations to combine and/or reasonable expectations of success, or for any other purpose related to its invalidity defenses. Cytek identifies that, consistent with the patent local rules, prior art references that Cytek intends to rely on for the above-stated purposes further include materials that either have been (1) identified in these Invalidity Contentions (though not necessarily in Appendix A) but not produced (*e.g.*, cited on the face of the Asserted Patents); (1) produced and identified in these Invalidity Contentions (*e.g.*, by BATES range) but not in Appendix A; or (3) produced but not specifically identified in these Invalidity Contentions.

Additionally, several of the prior art references are related patent applications and issued patents that contain substantially the same subject matter (*e.g.*, published U.S. patent applications, and issued U.S. Patents, foreign applications and issued patents). Any citation to or quotation from any of these patent applications or patents, therefore, should be understood as encompassing any parallel citation to the same subject matter in other related applications or patents. Cytek also

reserves the right to later rely upon all references or portions of references provided in **Appendix A** to supplement or amend its disclosures contained herein. Also, to the extent not expressly mentioned herein, Cytek incorporates by reference: (1) any and all prior art contained or identified in documents produced thus far by Beckman Coulter to Cytek in this case, including references cited in or on the face of the Asserted Patents; and (2) any and all additional materials regarding invalidity that should have been produced to Cytek but have not been produced to date, to the extent that any exist.

Each disclosed item of prior art is evidence of a prior invention by another under 35 U.S.C. § 102(g), as evidenced by the named inventors, authors, organizations, and publishers involved with each such reference. Cytek further intends to rely on admissions of the named inventors concerning the prior art, including statements found in the Asserted Patents, their prosecution histories, related patents and/or patent applications, any testimony, and the papers filed and evidence submitted by Beckman Coulter in conjunction with this litigation.

F. Whether Prior Art Anticipates or Renders Obvious the Asserted Claims

Subject to Cytek's reservation of rights, Cytek identifies in the attached **Exhibits A-1** through **A-24**, **B-1** through **B-24**, **C-1** through **C-24**, and **D-1** through **D-24**, identified in **Appendix B** ("Prior Art Invalidity Charts") prior art references that anticipate the Asserted Claims under at least pre-AIA 35 U.S.C. §§ 102(a), (b), (e), and/or (g), or AIA 35 U.S.C. § 102, either expressly or inherently, and/or render obvious the Asserted Claims under 35 U.S.C. § 103 either alone or in combination with other references cited therein. Each Asserted Claim is anticipated by, and/or obvious in view of, one or more items of prior art identified in these disclosures, alone or in combination. Tables identifying prior art references that anticipate the claims, and the combinations of references that render obvious the claims, are provided in Section F.i.d below.

Much of the art identified in the attached Prior Art Invalidity Charts reflects common knowledge and the state of the art at the time of alleged priority date of the Asserted Patents. Cytek further relies on well-known principles in flow cytometry, biophotonics, optical engineering, and related concepts, as exemplified in, but not limited to, Howard Shapiro, *Practical Flow Cytometry* (4th ed. 2003), Paras N. Prasad, *Introduction to Biophotonics* (2003), Philip. C.D. Hobbs, *Building Electro-Optic Systems: Making It All Work* (2d ed. 2009), incorporated by reference and available for inspection upon request. *See also* CYTEK_0000015657 - CYTEK_0000015780. Cytek may rely on additional citations, references, expert testimony, and other material to provide context or to aid in understanding the cited portions of the references and/or cited features of the systems. Cytek may also rely on expert testimony explaining relevant portions of references, relevant systems, relevant calculations and measurements, and other discovery regarding relevant subject matter. Additionally, Cytek may rely on other portions of any prior art reference for purposes of explaining the background and general technical subject area of the reference.

Where an individual reference is cited with respect to all elements of an Asserted Claim, Cytek contends that the reference anticipates the claim under pre-AIA 35 U.S.C. §§ 102(a), (b), (e), and/or (g), or AIA 35 U.S.C. § 102, and also renders obvious the claim under pre-AIA and AIA 35 U.S.C. § 103, both by itself in view of the knowledge of a person of ordinary skill in the art and in combination with the other cited references to the extent the reference is not found to disclose one or more claim elements. A single prior art reference, for example, can establish obviousness where the differences between the disclosures within the reference and the claimed invention would have been obvious to one of ordinary skill in the art. For instance, “[c]ombining two embodiments disclosed adjacent to each other in a prior art patent does not require a leap of inventiveness.” *Boston Sci. Scimed, Inc. v. Cordis Corp.*, 554 F.3d 982, 991 (Fed. Cir. 2009). To

the extent Beckman Coulter contends that an embodiment within a particular item of prior art does not fully disclose all limitations of a claim, Cytek accordingly reserves its right to rely on other embodiments in that prior art reference, or other information, to show single reference obviousness under pre-AIA and AIA 35 U.S.C. § 103(a).

Where an individual reference is cited with respect to fewer than all elements of an Asserted Claim, Cytek contends that the reference renders obvious the claim under pre-AIA and AIA 35 U.S.C. § 103(a) in view of each other reference and combination of references that discloses the remaining claim element(s), as indicated in the Prior Art Invalidity Claim Charts submitted herewith and the tables in Section F.i.d, and as more fully discussed below. “Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007), quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17-18 (1966). Exemplary motivations to combine references are discussed below. Cytek reserves the right to rely upon any references or assertions identified herein in connection with Cytek’s contention that each Asserted Claim is invalid under 35 U.S.C. § 103 and to rely upon expert testimony addressing such references and assertions.

The fact that prior art is identified to anticipate the Asserted Claims presents no obstacle in also relying on that reference as a basis for invalidity based on obviousness. It is established that “a rejection for obviousness under § 103 can be based on a reference which happens to anticipate the claimed subject matter.” *In re Meyer*, 599 F.2d 1026, 1031 (C.C.P.A. 1979). To the extent any prior art item listed in **Appendix A** may not fully disclose a limitation of an Asserted Claim or is alleged by Beckman Coulter to lack disclosure of the limitation, such limitation is present and

identified in another prior art item as shown in the attached Prior Art Invalidity Claim Charts and the tables in Section F.i.d.

Many of the references cited in the Prior Art Invalidity Claim Charts cite or relate to additional references and/or products, systems, or services. Cytek may rely upon such additional references and copies or exemplars of such products or systems. Cytek will produce or make available for inspection any such cited references that it intends to rely upon. Cytek may also rely upon the disclosures of the references cited and/or discussed during the prosecution of the Asserted Patents and/or the assertions presented regarding those references.

Each limitation of the Asserted Claims was well-known to those of ordinary skill in the art before the alleged priority dates of the Asserted Patents, as detailed below and described in the accompanying Prior Art Invalidity Charts. As explained more fully below and throughout these Invalidity Contentions, the Asserted Claims of the Asserted Patents are anticipated and/or obvious in view of the prior art references listed in **Appendix A**.

i. Obviousness and Motivations to Combine

Each prior art reference may be combined with one or more other prior art references to render obvious the Asserted Claims in the combinations identified herein and as explained in more detail below. The disclosures of these references also may be combined with information known to persons skilled in the art at the time of the alleged invention, and understood and supplemented in view of the common sense of persons skilled in the art at the time of alleged invention, including any statements in the intrinsic record of the Asserted Patents and related applications.

A person of ordinary skill in the art would have been motivated to combine the prior art based on the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. The identified prior art references, including portions cited

in the Prior Art Invalidity Charts submitted herewith, address the same or similar technical issues and suggest the same or similar solutions to those issues at the Asserted Claims. On an element-by-element basis, Cytek expressly intends to combine one or more prior art items with each other to address any contentions from Beckman Coulter that a particular prior art item supposedly lacks one or more elements of an Asserted Claim. In other words, Cytek contends that each charted prior art item can be combined with other charted prior art items when a particular prior art item lacks or does not explicitly disclose an element or feature of an Asserted Claim, as set forth in the Prior Art Invalidity Charts and tables in Section F.i.d. The obviousness combinations identified below are not to be construed to suggest that any reference included in the combinations is not anticipatory. Cytek will further specify the motivations to combine the prior art, including through reliance on expert testimony, at the appropriate later stage of this litigation.

A person of ordinary skill in the art would have been motivated to combine the prior art as described in the Prior Art Invalidity Charts and the tables in Section F.i.d. As the Supreme Court held in *KSR International Company v. Teleflex, Inc.*: “The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” 550 U.S. at 416. The Supreme Court further held that, “[w]hen a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.” *Id.* at 417.

Moreover, “in many cases a person of ordinary skill will be able to fit the teachings of

multiple patents together like pieces of a puzzle.” *Id.* at 420. It is sufficient that a combination of elements was “obvious to try” holding that, “[w]hen there is a design need or market pressure to solve a problem and there are a finite number of identified, predictable solutions, a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.” *Id.* at 421. “In that instance the fact that a combination was obvious to try might show that it was obvious under § 103.” *Id.* Finally, the Supreme Court recognized that “[g]ranting patent protection to advances that would occur in the ordinary course without real innovation retards progress and may, in the case of patents combining previously known elements, deprive prior inventions of their value or utility.” *Id.* at 419. All of the following rationales recognized in *KSR* support a finding of obviousness for all of the combinations identified herein:

- 1) Combining prior art elements according to known methods to yield predictable results;
- 2) Simple substitution of one known element for another to obtain predictable results;
- 3) Use of known techniques to improve similar devices (methods or products) in the same way;
- 4) Applying a known technique to a known device (method or product) ready for improvement to yield predictable results;
- 5) “Obvious to try”—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success;
- 6) Known work in one field of endeavor may prompt variations of it for use in either the same field or a different one based on design incentives or other market

forces if the variations would have been predictable to one of ordinary skill in the art; and

7) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention.

Certain of these rationales are discussed more specifically below. The fact that others are not discussed more specifically should not be interpreted as an admission or concession that it does not apply. To the contrary, the discussion below simply provides more explanation of these specific rationales.

Cytek further contends that the prior art identified in these Invalidity Contentions is evidence of simultaneous or near-simultaneous independent invention by others of the alleged invention as recited in one or more of the Asserted Claims. Cytek reserves its right to rely on the simultaneous or near-simultaneous independent invention by others as further evidence of the obviousness of the Asserted Claims.

Each limitation of the Asserted Claims was well-known to those of ordinary skill in the art before the alleged priority date of the Asserted Patents, as detailed below and in the attached Prior Art Invalidity Charts. The elements recited in the Asserted Claims are mere combinations and modifications of these well-known elements. A person of ordinary skill in the art would have been able and motivated to improve the existing technology in the same or similar manner by combining or modifying the individual elements that were already known in the art to yield predictable results.

Subject to the foregoing, Cytek identifies the following exemplary reasons that skilled artisans would have combined elements of the prior art to render obvious the Asserted Claims. The fact that others are not discussed more specifically should not be interpreted as an admission

or concession that they do not apply. To the contrary, the discussion below simply provides more explanation of these specific rationales.

a. Motivations Identified During Prosecution

Cytek hereby expressly incorporates by reference any statements and reasons set forth by the Examiner during prosecution of the Asserted Patents and related patent applications as to why it would have been obvious to modify or combine references to achieve the limitations of the Asserted Claims.

b. Combinations of References Through Citations

Numerous prior art references cite to, discuss, or build upon other references. Where one reference cites or discusses another reference, a person of ordinary skill in the art would have been motivated to consider their teachings in combination, as they would be understood to provide related teachings in a similar field.

In some instances, multiple prior art publications and/or physical references discuss or address the same or substantially similar underlying system or other project, such as commercial products and successive versions thereof, or multiple publications discussing the same subject matter. Where multiple references discuss or relate to the same or related underlying projects, systems, or other subject matter, it was obvious to combine the discussions and disclosures of the references as they would be understood to describe features or potential features of the underlying project, system, technique, or other subject matter. Similarly, where one reference cites or discusses other references or their teachings, or references have one or more authors in common and a related area of subject matter, it would have been obvious to consider the teachings of the references in combination with each other due to the express relationships and commonalities between the references.

Further, for each set of references that together refer to or describe the same system and/or potential improvements to the same system, it would have been obvious to combine such references. In particular, to the extent the items are commonly owned, they would be within the knowledge of the same company, and the company would be motivated to use elements from one reference to improve another seeking to solve the same or similar problems.

c. Motivations to Combine by Subject Matter

i. APDs

Claim 5 of the '443 Patent recites “one or more avalanche photodetector(s) (APDs).” Claims 1 and 16 of the '107 Patent recite “avalanche photodiodes (APDs).” Claims 1, 13, and 18 of the '106 Patent, and Claim 1 of the '582 Patent, recite a “semiconductor detector” that a skilled artisan would have understood to include APDs. Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, use of APDs for signal detection in WDMs of flow cytometers was well-known, routine, conventional, and widely available before the alleged invention.

The use of APDs as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that practice and/or embody the described features and/or functionality of an APD, and the associated benefits and advantages of its use (*e.g.*, smaller footprint, higher sensitivity / quantum efficiency, high gain, better or comparable signal-to-noise as PMTs (particularly in red and near infrared region), cost-effectiveness by time of

invention, insensitivity to magnetic fields, acceptable operating temperatures (including with cooling technologies), excellent time resolution). APD technology, including its implementation in WDMs broadly and for flow cytometer applications, was well-known in the prior art, and the prior art teaches numerous examples of implementing APDs for signal detection in a flow cytometer (including in a WDM). *See, e.g.*, BD FACSAArray System, Doornbos-1993, Frazier-402, Gjelsnes-695, Lawrence-2006, Lawrence-1-2008, Lawrence-2-2008, Li-438, Luminex System, Patt-324, Stewart-2005, Zhao-2011. For example, certain references disclose the following motivations to combine:

- “There are several advantages with a flow cytometer containing APDs, CD-lenses, and a diode laser. First, the flow cytometer system can be very small... Second, the components used are very cheap. No high-voltage power supplies are needed for the APDs; a voltage of 200 V suffices..... We have shown that it is possible to design and operate a flow cytometer using a diode laser for illumination and avalanche photodiodes for the detection of low intensity scattered light. The results are comparable to the data obtained from a conventional flow cytometer.” (Doornbos-1993, p.594.)
- “[W]e have also modified a FACScan (BDB) to a single IR laser instrument by replacing the 488-nM air-cooled laser with the LaserMax IR laser and one PMT with the APD. The LSR-II is supplied with solid-state lasers, and, although the PMT arrangement is different, replacing one of the PMTs with an APD as described here should not be difficult... [F]or longer wavelengths, e.g., longer than 850 nM, the sensitivity of the APD is likely to make it the device of choice... With the capability of measuring probes in the IR region, a new dimension in multicolor fluorescence

becomes practical.. The capability of a commercial flow cytometer can be enhanced by modification to provide excitation and fluorescence measurements in the IR region. This new capability will provide for a whole new series of dyes for multicolor interrogation of cellular properties.” (Stewart-2005, pp.109-110.)

- “In this report we have demonstrated the sensitivity and dynamic range of the single element APD detector operating in the visible wavelength region using the six-peak bead set. The emission intensity from these beads is similar to the emission levels expected for working flow cytometer systems, and the performance is comparable to PMT based instruments. The responsivity of the APD is better than the PMT in the near infrared. We report initial studies on cell proliferation measurements that demonstrate application of the APD detector in the near infrared. These results show the improved spectral operating range of the APD detector.” (Lawrence-2006, at 9.)
- “The flow cytometry test beads are used to demonstrate the relative performance of the APD and PMT detectors at different intensities and wavelengths. These studies show that in the visible wavelength region, the APD has comparable performance to the PMT at most signals, while the PMT has better signal to noise performance only at low signal levels. In the red and near infrared spectral regions, the APD has better signal to noise performance than the PMT at low and high signal intensity conditions.” (Lawrence-1-2008, at 10.)
- “The APD array[] is [an] excellent photo-counting device, whose features include the following: excellent photon detection efficiency, high gain 10^5 - 10^6 ; room temperature operation; insensitive to magnetic fields; excellent time resolution, that

are important for the laboratory-built optical system.” (Zhao-2011, at 2.)

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art’s motivation to combine/modify to include use of APDs, and their reasonable expectation of success, may be found at CYTEK_0000014257-CYTEK_0000015656; CYTEK_0000020835-CYTEK_0000020859; CYTEK_0000020860-CYTEK_0000020886; CYTEK_0000020887-CYTEK_0000020891; RMD_000000001-RMD_00000203. Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

ii. Concave Mirrors

Claims 1 and 18 of the ’443 Patent recite “at least one curved mirror” implemented within a WDM, and Claim 6 further identifies that this curved mirror may be a “concave mirror.” Claims 1 and 20 of the ’582 Patent recite an “optical relay element” that may comprise a “curved mirror.”

Claims 1, 15, and 18 of the '106 Patent each recite a “curved mirror.” Claims 3, 16, and 20 of the '107 Patent each recite a “concave mirror.” The term “curved mirror” is indefinite, lacks written description support, and is not fully enabled, but as to “concave mirror,” nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, use of concave mirrors in WDMs was well-known, routine, conventional, and widely available before the alleged invention. WDMs used in analogous telecommunications application had implemented concave mirrors in their configurations for well over a decade before the alleged invention.

Implementation of concave mirrors within a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement these curved mirrors, and the associated benefits and advantages of their use (*e.g.*, maintaining collimation, reducing beam divergence, reducing signal loss, reducing/compensating/removing filter tilting errors within the relay architecture, use with a beam of a small beam diameter to allow WDM miniaturization). Use of concave mirrors was well-known in the prior art, and the prior art teaches numerous examples of concave mirrors being implemented in WDMs, including those used for flow cytometry applications. *See, e.g.*, Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, He-343, Jayaraman-517, Lemoff-864, Panotopoulos-677. For example, certain references disclose the following motivations to combine:

- “One of the features in the designs is to provide at least one concave mirror for compensating filter tilting errors. The concave mirrors is placed where an incident traveling distance of a light beam is substantially similar or equal to the reflected traveling distance of the beam such that the filter tilting errors successively introduced over a number of optical filters can be successively reduced, compensated or removed over a subsequent number of optical filters as the light beam travels.” (He-343, Abstract.)
- “The relay mirrors are focusing mirrors, so that the demultiplexer can be operated with a non-collimated light beam in a manner that controls the tendency of such a beam to have a large angle of divergence, while taking advantage of the small beam diameter in order to create a demultiplexer with greater miniaturization.” (Lemoff-864, 2:31-37.)
- “It is important to note that the relay mirrors are concave mirrors, so that the non-collimated and diverging light beam is continuously refocused while propagating between adjacent filters, allowing the demultiplexer to be extremely small as compared to prior art bulk optical demultiplexers for non-collimated beams.” (Lemoff-864, 5:2-7.)
- “Each relay mirror may have a non-planar surface to maintain the collimation of the light as the light travels through the [De]MUX.” (Panotopoulos-602, 3:14-6.)
- “The mirrors 112 of the first element 110 may be formed based on concave mirror features of the first element 110, in contrast to convex features of the glass slab (such as lenses) that may be more difficult to manufacture, compared to concave features molded into the first element 110.... Use of the mirrors 112 by the first

element 110 provides benefits in terms of improved temperature stability and chromatic dispersion characteristics, compared to use of refractive elements. For example, relay mirrors keep the optical beam collimated as it bounces in the relay cavity, and parabolic mirrors can couple the relay cavity to the optical fiber 102. The lenses formed as surfaces of the first element 110 (e.g., as a concave features of the first element 110), are more resistant to changes in performance characteristics as a function of temperatures, e.g., as compared to lenses.” (Panatopoulos-677, [0022].)

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art’s motivation to combine/modify to include use of concave mirrors, and their reasonable expectation of success, may be found at CYTEK_0000015920-CYTEK_0000016042. Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of

success.

iii. Collecting Optical Element

Claims 1, 13, and 18 of the '106 Patent recites a “collecting optical element configured to collect and focus fluorescent light emitted by a particle illuminated by the light source such that the fluorescent light leaving the collecting optical element converges.” Claims 13 and 18 of the '443 Patent recites an “optical element configured to detect scattered light emitted by the particle in the flow channel and illuminated by” a light source.² Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, collecting optical elements were standard features of flow cytometers by the time of the alleged invention.

Implementation of collecting optical elements as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement collecting optical elements, and the associated benefits and advantages of their use (*e.g.*, increasing/maximizing photon collection & throughput, increased collection sensitivity and/or efficiency, reducing manufacturability and/or fabrication costs, certain designs enabling use of APDs over PMTs (particularly in a 1:1 relay architecture for detection optics), designs intended to reduce chromatic aberration)). Use of collecting optical elements was well-known in the prior art, and the prior art teaches numerous examples of collecting optical elements implemented in a

² Claim 14 further recites that the claimed optical element “includes a collecting optical element.”

flow cytometer to collect and focus scattered light from particles in a flow cell channel. *See, e.g.*, BD FACSAArray System, BD LSR II System, BD LSRFortessa System, Cytex's Curved-Mirror DXP Wavelength Division (de)Multiplexer Detectors, Grann-908, Hansen-412, Heffelfinger-967, Ilkov-283, Li-438, Luminex System, Oostman-539, Stoffel 2005, Thomas-623, Yount-804. For example, certain references disclose the following motivations to combine:

- “Revolutionary new optics collects more light. The collection optics on the BD LSR II flow cytometer includes patented octagon and trigon optical arrays. The optical arrays increase the sensitivity and flexibility of the BD LSR II flow cytometer, yielding more information from each sample. Light from four spatially separated laser beam spots is delivered by fiber optics to octagon and trigon detector arrays.” (BD LSR II System, Brochure, 4.)
- “A quartz cuvette flow cell is gel-coupled to the collection optics. The design helps ensure that lasers are precisely focused on the sample stream to generate the greatest signal and ensure that the maximum amount of emitted light is collected.” (BD LSRFortessa System, Brochure, 6-7.)
- “Accordingly, there is a need for improved collection efficiency in flow cytometry without significantly compromising the resolution of the instrument. There is a need for increased sensitivity and/or throughput of flow cytometry without significantly compromising the manufacturability or construction cost of the instrument.” (Ilkov-283, 1:66-2:4.)
- “An optical instrument using a plurality of lasers of different colors with parallel, closely spaced beams to stimulate scattering and fluorescence from fluorescent biological particulate matter, including cells and large molecules. A large numerical aperture

objective lens collects fluorescent light while maintaining spatial separation of light stimulated by the different sources.” (Oostman-539, Abstract.)

- “In addition, a miniaturized flow cytometer, which would be suitable for use in any biotechnology laboratory or in the ‘field,’ was constructed. The custom-built flow cytometer, designated the dual channel virus counter (DCVC), was designed to detect protein stain fluorescence events and DNA stain fluorescence events simultaneously on two distinct channels.” (Stoffel 2005, 140-41.)
- “Another object of the present invention is to provide a system and method that enables a flow cytometer to capture and sample an entire waveform representative of an event being read, and which provides improved processing and analysis of the sampled data in a real-time or near real-time basis.” (Yount-804, 3:58-63.)

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine

and/or reasonable expectations of success.

iv. Collimating Optical Element

Claims 1 and 14 of the '582 Patent recites “a collimating optical element arranged to receive light from a light source, the collimating optical element configured to project a collimated beam.” Claim 20 of the '582 Patent recites a “collimating optical element” that is “configured to project a first image.” Claim 10 of the '443 Patent recites a “collimated beam.” Claims 1, 13, and 18 of the '106 Patent recite “a collimating optical element that is separate from the collecting optical element and is arranged to receive the fluorescent light collected by the collecting optical element, the collimating optical element configured to collimate the fluorescent light.” While Beckman Coulter’s interpretation of term “collimating optical element” and terms related to collimation in its infringement contentions render them indefinite, lacking written description support, and not fully enabled, the use of collimating optical elements in WDMs as Beckman Coulter applies the term was well-known, routine, conventional, and widely available before the alleged invention. WDMs, including in flow cytometers, used collimating optical elements to collimate incident light long before the alleged invention.

Use of collimating optical elements within a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement these collimating optical elements, and the associated benefits and advantages of their

use (*e.g.*, minimizing photon loss, improved filter efficiency, and color decomposition). Use of collimating optical elements was well-known in the prior art, and the prior art teaches numerous examples of WDMs using collimating optical elements in flow cytometry applications. *See, e.g.*, BD FACSAArray System, BD LSR II System, BD LSRFortessa System, BD FACScan System, BD FACSCalibur System, Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, Frazier-402, Heffelfinger-967, Gjelsnes-695, Grann-908, Grann-976, He-343, Ilkov-283, Jayaraman-517, Lemoff-864, Li-244, Luminex System, Oostman-539, Ortyn-357, Panotopoulos-677, Patt-324, Thomas-623. For example, certain references disclose the following motivations to combine:

From these references, it is clear that collimating lenses offered a finite number of identified, predictable solutions in the art concerning de-multiplexing wavelengths of light and making light rays in a beam parallel. For POSAs wishing to analyze more colors on a flow cytometer while minimizing photon loss and improving filter efficiency and/or color decomposition, a collimating lens would have been obvious to try. *See, e.g.*, Frazier-402 at 2:39-46 (describing a customizable WDM that can separate (using a collimating lens) an increasing numbers of optical inputs); Jayaraman-517 at 1:49-56, 3:57-4:11 (describing a WDM containing a collimating microlens that demultiplexes incoming wavelengths of light to achieve improved insertion loss characteristics); Leif-611, 3:32-41 (describing the importance of correcting for divergence in signal); Oostman-539 at ¶¶ 1, 8 (describing a flow cytometer containing a WDM that decomposes multiple wavelengths of light using a collimating lens).

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted

herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art's motivation to combine/modify to include use of a collimating optical element, and their reasonable expectation of success, may be found at CYTEK_0000015781-CYTEK_0000015919. Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

v. Focusing Optical Element

Claims 1, 3, 17, 18, and 26 of the '582 Patent recite a "focusing optical element configured to focus" light onto a detector. Claim 4 of the '443 Patent recites "a set of elements, each element of the set of elements positioned in an optical path between a different pair of a filter of the set of filters and a detector of the set of detectors, wherein each element of the set of elements includes a bandpass filter, a lens, or a combination thereof." Claim 14 of the '106 Patent recites a "row of focusing optical elements, each of the focusing optical elements in the row arranged and configured to focus" light onto a detector. Claims 14 and 17 of the '107 Patent each recite "focusing lenses." Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, use of focusing lenses to focus light onto detectors was well-known,

routine, conventional, and widely available before the alleged invention.

Implementation of focusing lenses to focus light onto detectors in a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement these focusing lenses, and the associated benefits and advantages of their use (*e.g.*, increased photon count per unit surface area on detector, minimizing photon loss, enabling better and more finely-grained wavelength detection (*e.g.*, by permitting an “infinity corrected optical system” that enables insertion of more mirrors/filters), increasing detector array sensitivity). Use of focusing lenses was well-known in the prior art, and the prior art teaches numerous examples of focusing lenses being implemented in WDMs to focus light on detectors, including those used for flow cytometry applications. *See, e.g.*, BD FACSAArray System, BD LSRII System, BD LSRFortessa System, BD FACScan System, BD FACSCalibur System, Cytex’s Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, Frazier-402, Gjelsnes-695, Grann-908, Grann-976, Ilkov-283, Lemoff-864, Li-244, Luminex System, Oostman-537, Ortyn-357, Patt-324, Thomas-623.

From these references, it is clear that a focusing optical element offered a finite number of identified, predictable solutions in the art concerning capturing the maximum amount of emitted light without sacrificing compactness. For a POSA wishing to improve the signal-to-noise ratio while maintaining a compact size, a focusing lens would have been obvious to try. *See, e.g.*,

Frazier-402 at 12:21-24 (noting that focusing lenses minimize photon loss); Ilkov-283 at 11:57-59 (noting how focusing lenses focus light into the detector); Lemoff-864 at 4:56-5:10 (explaining that focusing lenses allow for better wavelength detection); Oostman-539 at ¶¶ 33, 37 (noting that focusing light onto a detector increases sensitivity); Patt-324 at ¶¶ 18, 34 (noting that the focusing lens forms an infinity corrected optical system, which allows for insertion of more mirrors and filters to identify more wavelengths of light).

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art's motivation to combine/modify to include use of focusing optical elements, and their reasonable expectation of success, may be found at CYTEK_0000017568-CYTEK_0000017579. Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

vi. Optical Fiber

Claims 1 and 16 of the '107 Patent recite an “optical fiber” and a WDM configured to “receive light from the optical fiber.” Claim 3 of the '443 Patent recites a WDM where “the light is received via an optical fiber,” and Claim 16 of the '443 Patent recites “an optical fiber optically disposed between the optical element and the WDM, and wherein the optical element is configured to output, ... the light to the WDM via the optical fiber.” Claim 18 of the '443 Patent recites “one or more optical fibers, each optical fiber configured to receive light from the optical element and provide the light to a WDM of the one or more WDMs.” Claim 2 of the '106 Patent recites “an optical fiber optically disposed between the collecting optical element and the WDM, the optical fiber arranged and configured to deliver the fluorescent light collected by the collecting optical element to the WDM.” Claims 2 and 23 of the '582 Patent recite “wherein the light source comprises light passing through a pinhole or light emitted from a facet of a multimode optical fiber.” Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, use of optical fibers to receive light from a light source and route it to a WDM was well-known, routine, conventional, and widely available before the alleged invention. WDMs used in analogous telecommunications application had implemented optical fibers in their configurations for decades before the alleged inventions, and use of optical fibers in flow cytometer setups had long been known.

Implementation of optical fibers (single mode or multimode) to direct light into a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a

person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement optical fibers in this manner, and the associated benefits and advantages of their use (*e.g.*, flexible configurations while minimizing loss of collected fluorescent and/or scattered light, increasing range of wavelengths for detection while maintaining compact/flexible design, efficiency, and cost-effectiveness). Use of optical fibers was well-known in the prior art, and the prior art teaches numerous examples of optical fibers being implemented to direct light into WDMs, including those used for flow cytometry applications. *See, e.g.*, BD LSR^{II} System, BD LSRFortessa System, Cytex's Curved-Mirror DXP Wavelength Division (de)Multiplexer Detectors, Frazier-402, Grann-908, Grann-976, He-343, Heffelfinger-967, Jayaraman-517, Lemoff-864, Li-244, Li-438, Luminex System, Oostman-539, Panotopoulos-677, Yount-804.

From these references, it is clear that an optical fiber offered a finite number of identified, predictable solutions in the art concerning imparting the flexibility in WDM design to detect more wavelengths of light while maintaining a compact shape. For POSAs wishing to analyze more colors with a flow cytometer while maintaining a compact size and having a flexible design, an optical fiber would have been obvious to try. *See, e.g.*, Frazier-402 at 8:7-16 (noting that the claimed WDM used an optical fiber to achieve flexibility in design); Grann-908 at 1:16-30 (explaining that one optical fiber may transmit several wavelengths of light, thereby increasing efficiency); Grann-976 at 1:28-41 (noting the cost savings of combining multiple different wavelengths into one optical fiber); He-343 at 1:13-28 (explaining that combining multiple wavelengths of light into one optical fiber expands WDM functionality); Heffelfinger-967 at ¶¶ 38, 39 (explaining that optical fibers minimize insertion loss and connectors may extend optical fibers to increase flexibility); Jayaraman-517 at 4:34-56 (explaining how an optical fiber lessens the

amount of insertion loss); Lemoff-864 at 1:9-18 (“[T]he data transmission capacity of a fiber is increased by a factor equal to the number of single-wavelength signals combined into a single fiber.”); Li-244 at 1:21-32, 1:50-62 (touting the efficiency benefits of combining multiple wavelength signals into the central location of an optical fiber); Li-438 at 12:42-62, 12:63-13:4 (noting that an optical fiber efficiently couples different wavelengths of light into one central location); Oostman-539 at ¶¶ 29-30 (noting that optical fibers may be easily moved to optimize input light from the collector); Panotopoulos-677 at ¶ 15 (noting that combining different wavelengths of light into one optical fiber allows for cost and space saving and increases flexibility in detecting more wavelengths of light).

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art’s motivation to combine/modify to include use of optical fibers, and their reasonable expectation of success, may be found at CYTEK_0000017580 - CYTEK_0000018155. Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further

substantiate the above-identified motivations to combine and/or reasonable expectations of success.

vii. Zig-Zag

Claim 7 of the '443 Patent recites “wherein the set of filters and the at least one mirror are configured to optically communicate at least one portion of the light back and forth between the set of filters and the at least one mirror in a zig-zag pattern.” Claim 17 of the '106 Patent similarly recites “wherein the row of mirrors and row of dichroic filters are arranged such that fluorescent light received by the WDM is reflected back and forth between the row of mirrors and the row of dichroic filters in a zig-zag pattern.” Claim 5 of the '107 Patent recites “wherein the WDM is configured such that a portion of an optical path between the array of mirrors and the arrays of filters forms a zig-zag pattern.” Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, a zig-zag optical path set by the configuration of mirrors and filters in a WDMs was well-known, routine, conventional, and widely available before the alleged invention. WDMs used in analogous telecommunications application had implemented a zig-zag optical path for their mirror-filter configurations long before the alleged invention.

Implementation of a zig-zag optical path for mirror-filter configurations in a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement these zig-zag optical paths, and the associated benefits and

advantages of their use (*e.g.*, reduced footprint, increased number of available channels in given space (*e.g.*, greater granularity in wavelength division), efficient color separation). Use of zig-zag optical paths based on certain mirror-filter configurations was well-known in the prior art, and the prior art teaches numerous examples of WDMs with this particular configuration including those used for flow cytometry applications. *See, e.g.*, BD FACSAArray System, BD LSRII System, BD LSRFortessa System, BD FACScan System, BD FACSCalibur System, Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, Frazier-402, Grann-908, Grann-976, He-343, Jayaraman-517, Lemoff-864, Li-244, Luminex System, Oostman-539, Panotopoulos-677, Yount-804.

From these references, it is clear that a zigzag WDM setup offered a finite number of identified, predictable solutions in the art concerning multiplexing and de-multiplexing different wavelengths of light. For POSAs seeking to analyze more colors on a flow cytometer while maintaining a compact size that was scalable, a zig-zag WDM configuration would have been obvious to try. *See, e.g.*, Frazier-402 at 2:39-46, 4:35-54, 6:44-60, 6:61-7:33, 7:34-61 (touting the zigzag WDM's configuration allowing for customization of optical inputs and detector arrays, as well as for a more compact machine); Grann-908 at 2:46-3:3, 2:17-25 (noting how the claimed WDM offered a compact shape, minimized optical loss, and efficiently allowed demultiplexing of light); Grann-976 at 2:1-10, 2:11-17, 2:18-27, 3:49-53, 4:8-14 (touting the compactness of the claimed WDM, which allows for more scale-able and affordable manufacturing and the ability to demultiplex any number of wavelengths); He-343 at 1:8-11, 2:50-3:33, 4:8-26, 5:7-24, 6:5-19 (describing how the claimed WDM maintains a compact shape while fixing a common filter tilting error); Lemoff-864 at 2:26-37, 4:8-21, 4:57-5:10, 6:25-50 (noting that the claimed WDM maintained miniaturization and limited signal loss using highly reflective mirrors and filters arranged in a zigzag fashion); Li-

244 at 2:23-44, 3:37-51, 4:15-20, 5:9-31 (noting that the optical elements associated with the claimed WDM are amenable to a small footprint, enhanced performance, low cost, and easier manufacturing process); Oostman-539 at ¶¶ 30, 32 (noting that the claimed zigzag WDM configuration offered compactness in shape); Panotopoulos-677 at ¶¶ 15, 16, 21, 22, 30, 31, 44, 52 (noting that the claimed WDM's zigzag pattern offered space and cost savings and enabled upgrades to detect more wavelengths of light); Yount-804 at 7:53-8:2 (noting that the claimed WDM could be expanded while maintaining compact size); Jayaraman-517 at 1:49-56, 3:29-36 (noting that the claimed WDM offered a compact design that had low insertion loss characteristics).

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art's motivation to combine/modify to include use of a mirror-filter configuration that enables a zig-zag optical path, and their reasonable expectation of success, may be found at CYTEK_0000019081-CYTEK_0000019730. *See also* Section F.i.c.x (identifying additional information that includes zig-zag configuration WDMs implemented in flow cytometers), incorporated here by reference.

Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

viii. Optical Block

Claim 4 of the '443 Patent recites “a block positioned between the at least one mirror and the set of filters, the block configured to enable transmission of the light.” Claims 10 and 26 of the '107 Patent recites “the WDM further comprises a block comprising a first surface; and each of [the filters in the array of filters / plurality of filters] is coupled to the first surface of the block.” Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, use of optical blocks in WDMs for light transmission was well-known, routine, conventional, and widely available before the alleged invention.

Implementation of optical blocks within a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement optical blocks, and the associated benefits and advantages of their use (*e.g.*, improved and passive alignment of optical components, high precision, reduced footprint / miniaturization, scalability, simplified manufacture / assembly (including by injection molding), reduced cost and complexity). Use of optical blocks was well-known in the prior art, and the prior art teaches

numerous examples of optical blocks being implemented in WDMs, including those used for flow cytometry applications. *See, e.g.,* Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, Grann-908, Grann-976, Luminex System, Jayaraman-417, Lemoff-864, Li-244, Panotopoulos-677. For example, the following references provide motivations to combine:

- “One of the key features and a primary object of the present invention is to provide a compact and cost effective optical multiplexer and demultiplexer for both single-mode or multi-mode fiber optic communication systems wherein the device includes preformed and premolded passively aligned optics.” (Grann-908, 2:51-56.)
- “The invention is a cost-effective wavelength division multiplexer for use in optical communication. Multiple embodiments are disclosed. One embodiment of the device consists of three modules, including a fiber array, a lens array and a filter array/reflector. Each array is made in wafer level with very precise position control. The three modules are bonded together by conventional wafer bonding techniques that require no active alignment. Each wafer can contain thousands of devices, enabling their manufacture in large quantities at low-cost.” (Grann-976, 2:1-10.)
- “The optical devices according to the invention can be monolithically integrated, and as a result are much more compact and inexpensive to manufacture than previous WDM devices. Devices made according to the invention consume only a few millimeters of on-wafer length which is approximately an order of magnitude less than previous approaches for a comparable number of channels.” (Jayaraman-517, 7:7-13.)
- “Because the demultiplexer uses integrated focusing reflectors in a folded geometry, the demultiplexer occupies less space than prior designs while providing the same

performance. Further, assembly of the demultiplexer involves attaching the interference filters to the main optical block with only a very coarse alignment.” (Lemoff-864, 4:16-21.)

- “The optical devices so designed in accordance with the present invention are amenable to small footprint, enhanced impact performance, lower cost, and easier manufacturing process. Various embodiments of the present invention may be used in many areas such as optical communications and devices and may be implemented in many ways as a subsystem, a device or a method. According to one embodiment, the present invention is an optical apparatus comprising a collimator, a glass block coated with a first coating and a second coating on one side, an array of filters affixed to another side of the glass block, each of the filters passing through one specified wavelength, an array of micro-lenses, the glass block, the filters and the micro-lenses, and a substrate on which the collimator, glass block and micro-lenses are bonded, where the glass block is tilted with respect to the collimator and the array of micro-lenses to ensure that each of the micro-lenses corresponds to one of the filters. Depending on implementation, one or more compensative plates may be inserted between the array of filters and the array of micro-lenses to correct optical errors introduced by one or more of these components.” (Li-244, 2:23-44.)
- “Thus, device 100 enables high-precision elements to be consolidated into and aligned by the first element 110, thereby reducing the cost and complexity of other elements, as well as simplifying overall manufacturing and assembly.” (Panotopoulos-677, [0021].)

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted

herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

ix. Compact

Claims 11 and 27 of the '107 Patent recites a “benchtop flow cytometer.” Claim 12 of the '107 Patent recites that “the flow cytometer is compact.” While it is unclear what the '107 Patent defines as “compact,” there were numerous compact and/or benchtop flow cytometers on the market at the time of invention, including with the various components claimed in the '107 Patent.

Compact and/or benchtop flow cytometers as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that were compact or could be fit on a benchtop, and the associated benefits and advantages of such a design

(e.g., reduced footprint, portability, scalability, manufacturability, modularity). Compact and/or benchtop flow cytometers were well-known in the prior art, and the prior art teaches numerous examples of compact, benchtop flow cytometers. *See, e.g.*, BD LSR II System, BD LSRFortessa System, BD FACSAArray System, Cytex's Curved-Mirror DXP Wavelength Division (de)Multiplexer Detectors, Grann-908, Gran-976, He-343, Heffelfinger-967, Luminex System, Oostman-539, Yount-804. For example, the following references provide motivations to combine:

- “The BD LSR II flow cytometer is the most flexible yet powerful benchtop analyzer available.” (BD LSR II System, Brochure, 1.)
- “The BD LSR II is an air-cooled multi-laser benchtop flow cytometer with the ability to acquire parameters for a large number of colors.” (BD LSR II System, User Guide, 1.)
- “Flexibility in a Small Space: The BD LSRFortessa puts the power of the proven BD LSR platform into a compact footprint. It can easily fit on the benchtop for cost-effective space use. This space efficiency is even more important for labs with limited space or where space cost is premium.” (BD LSRFortessa System, Brochure, 4.)
- “The special order BD LSRFortessa™ cell analyzer puts the power of the BD LSR platform into a compact footprint, and is about half the size of the BD™ LSR II analyzer. It can easily fit on the benchtop for more cost-effective space utilization. Delivering maximum sensitivity and resolution required for multicolor applications, the special order BD LSRFortessa cell analyzer supports up to 7 lasers and can be used to detect 18 colors simultaneously. In addition to the reduced size, design innovations make filters and detectors more accessible, for easier setup of new experiments.” (BD LSRFortessa System, Special Order BD LSRFortessa Cell Analyzer, 1; *see also* Tech Spec, 1.)

- “The BD LSRFortessa is an air-cooled multi-laser benchtop flow cytometer with the ability to acquire parameters for a large number of colors. It uses fixed-alignment lasers that transmit light through a flow cell to configurable octagon and trigon detector arrays. These detectors collect and translate the resulting fluorescence signals into electronic signals. Cytometer electronics convert these signals into digital data.” (BD LSRFortessa System, User Guide, 10.)
- “The FACSAArray combines the state-of-the-art flow cytometer components with a user-friendly interface in a compact benchtop unit smaller in size than most tabletop centrifuges.” (BD FACSAArray System, Review, 1.)
- “The instrument has been designed to increase the sensitivity of protein quantitation, simply the often dauntingly complex task of flow cytometry, and leave a small footprint in the lab.” (BD FACSAArray System, Review, 1.)
- “One of the key features and a primary object of the present invention is to provide a compact and cost effective optical multiplexer and demultiplexer for both single-mode or multi-mode fiber optic communication systems wherein the device includes preformed and premolded passively aligned optics.” (Grann-908, 2:51-56.)
- “Accordingly, what is needed is a system and method for providing a WDM that has improved reliability, is compact and easily manufactured at low cost. The present invention addresses such a need.” (Grann-976, 1:52-55.)
- “There thus has been a need for compact WDM modules that minimize the problem of error amplification as discussed above and provide high tolerance for manufacturing with high yield.” (He-343, 2:35-38.)

- “This allows for a rather compact system that is able to rather efficiently collect the fluorescent light. This is one example of positioning of elements (using thin lens approximation) for FIG. 4.” (Heffelfinger-967, [0060].)
- “A detector array has up to ten detectors arranged to separate and measure colors within relatively narrow bands by decimation of light arriving in a fiber. A large number of detectors is mounted in a compact polygonal arrangement by using reflective transfer legs from multiple beam splitters where the transfer legs arise from a polygonal arrangement of beam splitters in a circumference within the circumferential arrangement of detectors.” (Oostman-539, Abstract.)

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

x. WDM

Claims 1 and 18 of the '443 Patent recite a “wavelength division multiplexer (WDM).” Claims 1 and 16 of the '107 Patent also recite a “wavelength division multiplexer (WDM).” Claims 1 and 13 of the '106 Patent similarly recite a “wavelength division multiplexer (WDM).” Nothing about these claim limitations add anything novel or non-obvious over the prior art. To the contrary, use of WDMs was well-known, routine, conventional, and widely available before the alleged invention. WDMs were broadly used in analogous telecommunications applications for decades before the alleged invention, and also as applied in the flow cytometer context.

Implementation of a WDM as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Moreover, a person of ordinary skill in the art would have readily appreciated the well-known and widespread use and disclosure of systems and devices that implement WDMs, and the associated benefits and advantages of their use (*e.g.*, increased wavelength detection range and subrange granularity, compactness, minimized optical loss, cost-efficient demultiplexing, increased sensitivity to identify characteristics in target sample, ease of manufacturing and assembly, improved optical alignment). Use of WDMs was well-known in the prior art, and the prior art teaches numerous examples of WDMs, including those used for flow cytometry applications. *See, e.g.*, BD FACSAArray System, BD LSRII System, BD LSRFortessa System, BD FACScan, BD FACSCalibur, Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, Frazier-402, Grann-908, Grann-976, Hansen-412, He-343, Ilkov-283, Lemoff-864, Li-244, Li-438, Luminex System, Oostman-539, Ortyrn-357, Panotopoulos-677, Patt-324, Yount-804.

From these references, it is clear that WDMs offered a finite number of identified, predictable solutions in the art concerning multiplexing and de-multiplexing different wavelengths of light. For a POSA seeking to analyze more colors on a flow cytometer while maintaining a compact size that was scalable, a WDM would have been obvious to try. *See, e.g.*, CYTEK_0000012161-68 (noting that the collection optics of the BD LSR II flow cytometer include octagonal optical arrays that increase sensitivity and flexibility to yield more information from each sample); CYTEK_0000011719-34 (noting that the optical system of the BD LSRFortessa flow cytometer offers a compact design, reduces excitation loss, improves light collection efficiency, and delivers maximum sensitivity and resolution); CYTEK_0000011935-38 (noting similar advantages of the BD LSRFortessa's WDM); CYTEK_0000011735 (listing the many different fluorescence options offered by the BD LSRFortessa's WDM); CYTEK_0000011932-33 (demonstrating that the BD LSRFortessa's WDM may be upgraded to include filters in the violet/ultraviolet wavelength ranges); CYTEK_0000011934 (listing the special order filters available to the BD LSRFortessa's WDM to increase wavelength detection while maintaining a compact size); Frazier-402 at 2:39-46, 4:35-54, 6:44-60, 6:61-7:33, 7:34-61 (touting the zigzag WDM's configuration allowing for customization of optical inputs and detector arrays, as well as for a more compact machine); Grann-908 at 2:46-3:3, 2:17-25 (noting how the claimed WDM offered a compact shape, minimized optical loss, and efficiently allowed demultiplexing of light); Grann-976 at 2:1-10, 2:11-17, 2:18-27, 3:49-53, 4:8-14 (touting the compactness of the claimed WDM, which allows for more scale-able and affordable manufacturing and the ability to demultiplex any number of wavelengths); Hansen-412 at 3:3-20 (describing how the claimed WDM allowed increased sensitivity to identify rare immune cells from whole blood samples); He-343 at 1:8-11, 2:50-3:33, 4:8-26, 5:7-24, 6:5-19 (describing how the claimed WDM maintains a compact shape while fixing

a common filter tilting error); Ilkov-283 at 5:62-6:45, 7:19-32, 8:57-9:3 (noting how the claimed WDM increases collection efficiency and detection resolution without sacrificing resolution or increasing expense); Lemoff-864 at 2:26-37, 4:8-21, 4:57-5:10, 6:25-50 (noting that the claimed WDM maintained miniaturization and limited signal loss using highly reflective mirrors and filters arranged in a zigzag fashion); Li-244 at 2:23-44, 3:37-51, 4:15-20, 5:9-31 (noting that the optical elements associated with the claimed WDM are amenable to a small footprint, enhanced performance, low cost, and easier manufacturing process); Li-438 at 2:4-25, 5:39-63, 6:34-43, 7:38-42, 8:66-9:24, 12:23-41, 13:5-33, 15:53-63 (noting that the claimed WDM offered a miniaturized, portable flow cytometer setup that is inexpensive); Oostman-539 at ¶¶ 30, 32 (noting that the claimed zigzag WDM configuration offered compactness in shape); Ortyn-357 at 10:57-11:2, 21:1-37 (noting that the claimed WDM's filter/detector arrangement imparts optical efficiency by only having the wavelength of light pass via a filter once); Panotopoulos-677 at ¶¶ 15, 16, 21, 22, 30, 31, 44, 52 (noting that the claimed WDM's zigzag pattern offered space and cost savings and enabled upgrades to detect more wavelengths of light); Patt-324 at ¶¶ 34-35 (noting that the claimed WDM offered an "infinity corrected optical system" that allows multiple wavelengths of light to be detected within the WDM); Yount-804 at 7:53-8:2 (noting that the claimed WDM could be expanded while maintaining compact size).

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the

subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Additional information that supports a person of ordinary skill in the art's motivation to combine/modify to include use of a WDM in a flow cytometer, and their reasonable expectation of success, may be found at CYTEK_0000015920 - CYTEK_0000017567. Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

xi. Flow Cell

Claim 13 of the '443 Patent recites 'a flow cell including a flow channel configured to enable passage of a particle.' Claim 15 of the '443 Patent recites "a plurality of lasers including a first laser configured to illuminate the particle in the flow channel at a first location; and a second laser configured to illuminate the particle at a second location in the flow channel." Claim 18 of the '443 Patent recites "a flow cell including a flow channel configured to enable passage of a particle." Claim 1 of the '106 Patent recites "a light source arranged to illuminate a stream of particles in a viewing zone of a flow cell in the flow cytometer." Claim 11 of the '106 Patent recites "wherein the plurality of lasers comprises a first laser configured to illuminate a particle in the stream at a first location in the viewing zone, and a second laser configured to illuminate the particle at a second location in the viewing zone." Claim 13 of the '106 Patent recites "a light source arranged to illuminate a stream of particles in a viewing zone." Claim 16 of the '107 Patent recites "a flow cell configured to permit liquid to flow through the flow cell" and "a laser

configured to project light into the flow cell.” While the terms “flow cytometer” and “flow cell” are not fully enabled as applied to the purported invention(s) recited in the Asserted Claims, nothing about these claim limitations, as it relates to standard flow cell configurations, add anything novel or non-obvious over the prior art. To the contrary, the use of flow channels, and lasers that illuminate particles within the flow channel of a flow cytometer were well-known, routine, conventional, and widely available before the alleged invention. These generally-claimed and high-level features were standard in flow cytometers.

Implementation of these features in a flow cytometer as recited in the claims would have been obvious to a person of ordinary skill in the art at least because doing so would have involved the combination of prior art elements according to known methods to yield predictable results, the simple substitution of one known element for another to obtain predictable results, the application of a known technique to a known device ready for improvement to yield predictable results, and/or would have been obvious to try. Use of a flow channel, and lasers that illuminate particles, beads, or other target materials within the flow channel of a flow cytometer (including at spatially separate locations when using multiple lasers), was well-known in the prior art, and the prior art teaches numerous examples for flow cytometry applications. *See, e.g.*, BD FACSAArray System, BD LSR II System, BD LSRFortessa System, Cytex’s Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, Gjelsnes-695, Hansen-412, Ilkov-283, Li-438, Luminex System, Oostman-539, Ortyn-357, Patt-324, Stoffel 2005, Thomas-623, Yount-804. For example, the following references provide motivations to combine:

- “Fluorescent-labeled particles are transported in a fluid stream from each well to a flow-through optical cuvette where they intercept with two laser beams. The fluorescent molecules are subsequently energized and their signals, along with particle-scattered light,

are detected and quantified by the BD FACSAArray electronics. The bioanalyzer is equipped with a green (532 nm) and a red (635 nm) laser, so the brightest fluorescent molecules can be used in parallel.” (BD FACSAArray System, FACSAArray, 4.)

- “Revolutionary new optics collects more light. The collection optics on the BD LSR II flow cytometer includes patented octagon and trigon optical arrays. The optical arrays increase the sensitivity and flexibility of the BD LSR II flow cytometer, yielding more information from each sample. Light from four spatially separated laser beam spots is delivered by fiber optics to octagon and trigon detector arrays. The 488-nm octagon array is capable of collecting up to seven colors plus side scatter (SSC). The 633-nm, 405-nm and 355-nm trigon arrays can each detect up to three fluorescent colors. The concept behind the optical arrays is that reflectance of light is more efficient than transmittance. . . Detecting more colors does not mean time-consuming adjustments; the BD LSR II flow cytometer allows filters and mirror changes to be made to the optical array without diminishing maximum signal.” (BD LSR II System, Brochure, 4.)
- “As the voltage is increased, the detector sensitivity increases, resulting in increased signal. As the voltage is decreased, the detector sensitivity decreases, resulting in decreased signal. Detector voltages are adjusted in BD FACSDiva software.” (BD LSR II System, User Guide, 36.)
- “A quartz cuvette flow cell is gel-coupled to the collection optics. The design helps ensure that lasers are precisely focused on the sample stream to generate the greatest signal and ensure that the maximum amount of emitted light is collected.” (BD LSRFortessa System, Brochure, 6-7.)

- “The special order BD LSRFortessa™ cell analyzer puts the power of the BD LSR platform into a compact footprint, and is about half the size of the BD™ LSR II analyzer. It can easily fit on the benchtop for more cost-effective space utilization. Delivering maximum sensitivity and resolution required for multicolor applications, the special order BD LSRFortessa cell analyzer supports up to 7 lasers and can be used to detect 18 colors simultaneously. In addition to the reduced size, design innovations make filters and detectors more accessible, for easier setup of new experiments.” (BD LSRFortessa System, Special Order BD LSRFortessa Cell Analyzer, 1; *see also* Tech Spec, 1.)
- “The BD LSRFortessa is an air-cooled multi-laser benchtop flow cytometer with the ability to acquire parameters for a large number of colors. It uses fixed-alignment lasers that transmit light through a flow cell to configurable octagon and trigon detector arrays. These detectors collect and translate the resulting fluorescence signals into electronic signals. Cytometer electronics convert these signals into digital data.” (BD LSRFortessa System, User Guide, 10.)
- “A second object of the present invention is to provide a liquid flow cytometer which provides an improved irradiation of the particles and a better collection both of scattered light and fluorescent light caused by the particles, thus enabling the sensitivity to be increased.” (Gjelsnes-695, 3:1-4.)
- “In a preferred embodiment, one of the right angle fluorescence channels of a flow cytofluorometric apparatus is adapted to serve as a wavelength specific sensor for right angle scatter. A sample of whole blood or buffy coat is incubated to allow specific antigens on the surface of the lymphocytes of the subclass in interest to combine with an antibody having a predetermined fluorescence response to given illumination (e.g. focused coherent

light from an argon ion laser), whereby cells of the subclass in interest themselves effectively become fluorescent responsive to such incident light. The cells of the sample are then passed through the flow channel of a flow cytometer having capacity to monitor forward light scatter, as well as right angle light scatter and fluorescence. Certain forward scatter conditions, when noted, are used in conjunction with right angle light scatter conditions, in order to gate detected fluorescence. Upon detection of specific fluorescence of a given color (e.g. green), an output signal is produced to indicate the occurrence of a lymphocyte of the given subclass. Thereupon, this data may be duly stored and/or displayed (e.g. on some form of histogram). Further, as is known in the art, cell sorting techniques may be utilized to physically isolate the lymphocyte cells of the given subclass.” (Hansen-412, 3:31-55.)

- “Accordingly, there is a need for improved collection efficiency in flow cytometry without significantly compromising the resolution of the instrument. There is a need for increased sensitivity and/or throughput of flow cytometry without significantly compromising the manufacturability or construction cost of the instrument.” (Ilkov-283, 1:66-2:4.)
- “When a particle passes through the sensing gate 220, a differential voltage is generated across the signal and noise detection channels 210A-B which is sensed and amplified by the differential amplifier 230. Although the differential voltage appearing across the input terminals of the differential amplifier 230 may have a relatively small amplitude, the amplitude of the differential voltage can be substantially enlarged by the gain of the differential amplifier 230. Thus, the present microfluidic differential electric resistive pulse type particle counting sensor 110 may provide a significant improvement in the signal-to-

noise ratio in the detection of particles flowing through the sensing gate 200.” (Li-438, 8:66-9:24.)

- “High throughput, high plex, automation compatible.” (Luminex System, Luminex 2011 Instrumentation, 1)
- “Efficiency: small sample size requires less than 5 mL of sample for up to 100 results; Increased multiplexing: do more by performing up to 500 analytes per well.” (Luminex System, Luminex Instrumentation, 1.)
- “Multiplex up to 100 tests in one well of a 96 well plate—up to 96,000 results in 1 hour; Generate more information on interrelationships between analytes within a single sample.” (Luminex System, Luminex 200 System, 2.)
- “Sensitivity: Detect 1000 fluorochromes phycoerythrin (PE) per xMAP microsphere; Capacity: Analyze multiple 96-well plates per batch; Analyze multiple assay templates per plate.” (Luminex System, Luminex Specifications, 1.)
- “An optical instrument using a plurality of lasers of different colors with parallel, closely spaced beams to stimulate scattering and fluorescence from fluorescent biological particulate matter, including cells and large molecules. A large numerical aperture objective lens collects fluorescent light while maintaining spatial separation of light stimulated by the different sources.” (Oostman-539, Abstract.)
- “All of these applications require an analysis system with the following principal characteristics:
 1. high speed measurement;
 2. the ability to process very large or continuous samples;
 3. high spectral resolution and bandwidth;

4. good spatial resolution;
 5. high sensitivity; and
 6. low measurement variation.” (Ortyn-357, 1:48-55.)
- “The system includes a light source and a lens that focuses light from the light source onto a small spot in a scanning location. A transport mechanism causes relative motion between a cell in the scanning location and the spot. A sensor generates a signal indicating the intensity of light emanating from the cell as a result of illumination by the light source. The system repeatedly takes readings of the light intensity signal and characterizes the light intensity along a substantially linear path across the cell.” (Patt-324, Abstract.)
 - “In addition, a miniaturized flow cytometer, which would be suitable for use in any biotechnology laboratory or in the “field,” was constructed. The custom-built flow cytometer, designated the dual channel virus counter (DCVC), was designed to detect protein stain fluorescence events and DNA stain fluorescence events simultaneously on two distinct channels.” (Stoffel 2005, 140-41.)
 - “Thus, there exists a need for a more efficient cytometry system which can present cytometry data in alternate locations on the fixed area display object without the need to adjust cytometer instrument hardware settings and rerun the cell sample through the flow cytometer. The present invention satisfies this need and provides related advantages as well. The present system and method, described herein, allows for a fixed hardware setting for all the possible range of particle sizes and intensities. Instead of adjusting the hardware settings, a mathematical operator or software gain is applied to the flow cytometry data. The data can then be presented in a different location on the display object other than the original fixed gain location.” (Thomas-623, [0007]-[0008].)

- “Another object of the present invention is to provide a system and method that enables a flow cytometer to capture and sample an entire waveform representative of an event being read, and which provides improved processing and analysis of the sampled data in a real-time or near real-time basis.” (Yount-804, 3:58-63.)

Cytek further hereby specifically incorporates by reference, and may rely upon for purposes of showing obviousness including motivations to combine, the disclosures cited for each reference with respect to the relevant limitations as cited in the prior art claim charts submitted herewith and the disclosures and teachings further cited below. Each cited disclosure evidences a teaching that a person of ordinary skill in the art would have considered relevant, and each cited disclosure may be relied upon as evidence of a teaching, suggestion, or motivation to combine the subject matter of the disclosure with other reference disclosures. Persons of ordinary skill in the art would have been motivated to combine these teachings of these references accordingly with the other references addressed herein to the extent they are not found to disclose this feature.

Cytek reserves the right to amend, supplement, and/or modify this disclosure upon further information, discovery, and analysis as the case progresses. Cytek also reserves its right to rely on any reference in Appendix A to further substantiate the above-identified motivations to combine and/or reasonable expectations of success.

d. Anticipation Prior Art and Obviousness Combinations

Cytek discloses the anticipating prior art and combinations of references in the below chart based on references identified in **Appendix A** and the Prior Art Invalidity Claim Charts submitted herewith. As demonstrated above, a skilled artisan would have had ample motivation to combine the references in the manner described herein to achieve the claimed inventions, and would have had a reasonable expectation that such combinations would have been successful.

'582 Patent, Asserted Claims	Application of Prior Art Under § 103
Claim 1, 3, 6, 15, 17, 18, 20, 21, 23, 25, 26	• BD FACSAArray System and He-343 • BD FACSAArray System and Jayaraman-517 • BD FACSAArray System and Lemoff-864 • BD FACSAArray System and Panotopoulos-677 • BD LSR^{II} System and BD FACSAArray System • BD LSR^{II} System, BD FACSAArray System, and He-343 • BD LSR^{II} System, BD FACSAArray System, and Jayaraman-517 • BD LSR^{II} System, BD FACSAArray System, and Lemoff-864 • BD LSR^{II} System, BD FACSAArray System, and Panotopoulos-677 • BD LSR^{II} System and Frazier-402 • BD LSR^{II} System, Frazier-402, and He-343 • BD LSR^{II} System, Frazier-402, and Jayaraman-517 • BD LSR^{II} System, Frazier-402, and Lemoff-864 • BD LSR^{II} System, Frazier-402, and Panotopoulos-677 • BD LSR^{II} System and Gjelsnes-695 • BD LSR^{II} System, Gjelsnes-695, and He-343 • BD LSR^{II} System, Gjelsnes-695, and Jayaraman-517 • BD LSR^{II} System, Gjelsnes-695, and Lemoff-864 • BD LSR^{II} System, Gjelsnes-695, and Panotopoulos-677 • BD LSR^{II} System and Luminex System • BD LSR^{II} System, Luminex System, and He-343 • BD LSR^{II} System, Luminex System, and Jayaraman-517 • BD LSR^{II} System, Luminex System, and Lemoff-864 • BD LSR^{II} System, Luminex System, and Panotopoulos-677 • BD LSR^{II} System and Patt-324 • BD LSR^{II} System, Patt-324, and He-343 • BD LSR^{II} System, Patt-324, and Jayaraman-517 • BD LSR^{II} System, Patt-324, and Lemoff-864 • BD LSR^{II} System, Patt-324, and Panotopoulos-677 • BD LSR^{II} System and Stewart-2005 • BD LSR^{II} System, Stewart-2005, and He-343 • BD LSR^{II} System, Stewart-2005, and Jayaraman-517 • BD LSR^{II} System, Stewart-2005, and Lemoff-864 • BD LSR^{II} System, Stewart-2005, and Panotopoulos-677 • BD LSRFortessa System and BD FACSAArray System • BD LSRFortessa System, BD FACSAArray System, and He-343 • BD LSRFortessa System, BD FACSAArray System, and Jayaraman-517 • BD LSRFortessa System, BD FACSAArray System, and Lemoff-864

'582 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSRFortessa System, BD FACSAArray System, and Panotopoulos-677 • BD LSRFortessa System and Frazier-402 • BD LSRFortessa System, Frazier-402, and He-343 • BD LSRFortessa System, Frazier-402, and Jayaraman-517 • BD LSRFortessa System, Frazier-402, and Lemoff-864 • BD LSRFortessa System, Frazier-402, and Panotopoulos-677 • BD LSRFortessa System and Gjelsnes-695 • BD LSRFortessa System, Gjelsnes-695, and He-343 • BD LSRFortessa System, Gjelsnes-695, and Jayaraman-517 • BD LSRFortessa System, Gjelsnes-695, and Lemoff-864 • BD LSRFortessa System, Gjelsnes-695, and Panotopoulos-677 • BD LSRFortessa System and Luminex System • BD LSRFortessa System, Luminex System, and He-343 • BD LSRFortessa System, Luminex System, and Jayaraman-517 • BD LSRFortessa System, Luminex System, and Lemoff-864 • BD LSRFortessa System, Luminex System, and Panotopoulos-677 • BD LSRFortessa System and Patt-324 • BD LSRFortessa System, Patt-324, and He-343 • BD LSRFortessa System, Patt-324, and Jayaraman-517 • BD LSRFortessa System, Patt-324, and Lemoff-864 • BD LSRFortessa System, Patt-324, and Panotopoulos-677 • BD LSRFortessa System and Stewart-2005 • BD LSRFortessa System, Stewart-2005, and He-343 • BD LSRFortessa System, Stewart-2005, and Jayaraman-517 • BD LSRFortessa System, Stewart-2005, and Lemoff-864 • BD LSRFortessa System, Stewart-2005, and Panotopoulos-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and BD FACSAArray System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Frazier-402 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Gjelsnes-695 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Luminex System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Patt-324 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Stewart-2005

'582 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Frazier-402 and He-343 • Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopoulos-677 • Gjelsnes-695 and He-343 • Gjelsnes-695 and Jayaraman-517 • Gjelsnes-695 and Lemoff-864 • Gjelsnes-695 and Panotopoulos-677 • Luminex System • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopoulos-677 • Oostman-537 • Oostman-537, BD FACSAarray System • Oostman-537, BD FACSAarray System, and He-343 • Oostman-537, BD FACSAarray System, and Jayaraman-517 • Oostman-537, BD FACSAarray System, and Lemoff-864 • Oostman-537, BD FACSAarray System, and Panotopoulos-677 • Oostman-537, Frazier-402, and He-343 • Oostman-537, Frazier-402, and Jayaraman-517 • Oostman-537, Frazier-402, and Lemoff-864 • Oostman-537, Frazier-402, and Panotopolous-677 • Oostman-537, Gjelsnes-695, and He-343 • Oostman-537, Gjelsnes-695, and Jayaraman-517 • Oostman-537, Gjelsnes-695, and Lemoff-864 • Oostman-537, Gjelsnes-695, and Panotopolous-677 • Oostman-537, Luminex System, and He-343 • Oostman-537, Luminex System, and Jayaraman-517 • Oostman-537, Luminex System, and Lemoff-864 • Oostman-537, Luminex System, and Panotopolous-677 • Oostman-537, Patt-324, and He-343 • Oostman-537, Patt-324, and Jayaraman-517 • Oostman-537, Patt-324, and Lemoff-864 • Oostman-537, Patt-324, and Panotopoulos-677 • Oostman-537, Stewart-2005, and He-343 • Oostman-537, Stewart-2005, and Jayaraman-517 • Oostman-537, Stewart-2005, and Lemoff-864 • Oostman-537, Stewart-2005, and Panotopoulos-677 • Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864

'582 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Patt-324 and Panotopoulos-677 • Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art. Stewart-2005 and He-343 • Stewart-2005 and Jayaraman-517 • Stewart-2005 and Lemoff-864 • Stewart-2005 and Panotopoulos-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.

'443 Patent, Asserted Claims	Application of Prior Art Under § 103
Claims 1, 2, 3, 6, 7, 10, 11	• BD LSR^{II} System • BD LSR^{II} System and He-343 • BD LSR^{II} System and Jayaraman-517 • BD LSR^{II} System and Lemoff-864 • BD LSR^{II} System and Panotopolous-677 • BD LSRFortessa System • BD LSRFortessa System and He-343 • BD LSRFortessa System and Jayaraman-517 • BD LSRFortessa System and Lemoff-864 • BD LSRFortessa System and Panotopolous-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors • Frazier-402 • Frazier-402 and He-343 • Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopolous-677 • Ilkov-283 and He-343 • Ilkov-283 and Jayaraman-517 • Ilkov-283 and Lemoff-864 • Ilkov-283 and Panotopoulos-677 • Luminex System • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopolous-677 • Oostman-537 • Oostman-537 and He-343

'443 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Oostman-537 and Jayaraman-517 • Oostman-537 and Lemoff-864 • Oostman-537 and Panotopolous-677 • Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopolous-677 • Thomas-623 and He-343 • Thomas-623 and Jayaraman-517 • Thomas-623 and Lemoff-864 • Thomas-623 and Panotopolous-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.
Claim 4	• BD LSR^{II} System • BD LSR^{II} System and Grann-908 • BD LSR^{II} System and Grann-976 • BD LSR^{II} System and Jayaraman-517 • BD LSR^{II} System and Lemoff-864 • BD LSR^{II} System and Li-244 • BD LSR^{II} System and Panotopolous-677 • BD LSRFortessa System • BD LSRFortessa System and Grann-908 • BD LSRFortessa System and Grann-976 • BD LSRFortessa System and Jayaraman-517 • BD LSRFortessa System and Lemoff-864 • BD LSRFortessa System and Li-244 • BD LSRFortessa System and Panotopolous-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Grann-908 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Grann-976 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Jayaraman-417 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Lemoff-864 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Li-244 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Panotopolous-677

'443 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopolous-677 • Luminex System • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopolous-677 • Oostman-537 and Jayaraman-517 • Oostman-537 and Lemoff-864 • Oostman-537 and Panotopolous-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.
Claims 15, 17, 18	• BD LSR^{II} System • BD LSR^{II} System and He-343 • BD LSR^{II} System and Jayaraman-517 • BD LSR^{II} System and Lemoff-864 • BD LSR^{II} System and Panotopolous-677 • BD LSRFortessa System • BD LSRFortessa System and He-343 • BD LSRFortessa System and Jayaraman-517 • BD LSRFortessa System and Lemoff-864 • BD LSRFortessa System and Panotopolous-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors • Ilkov-283 and Frazier-402 • Ilkov-283, Frazier-402, and He-343 • Ilkov-283, Frazier-402, and Jayaraman-517 • Ilkov-283, Frazier-402, and Lemoff-864 • Ilkov-283, Frazier-402, and Panotopolous-677 • Ilkov-283 and He-343 • Ilkov-283 and Jayaraman-517 • Ilkov-283 and Lemoff-864 • Ilkov-283 and Panotopoulos-677 • Luminex System and Frazier-402 • Luminex System, Frazier-402, and He-343 • Luminex System, Frazier-402, and Jayaraman-517 • Luminex System, Frazier-402, and Lemoff-864 • Luminex System, Frazier-402, and Panotopolous-677 • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864

'443 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Luminex System and Panotopolous-677 • Oostman-537 • Oostman-537 and He-343 • Oostman-537 and Jayaraman-517 • Oostman-537 and Lemoff-864 • Oostman-537 and Panotopolous-677 • Patt-324 and Frazier-402 • Patt-324, Frazier-402, and He-343 • Patt-324, Frazier-402, and Jayaraman-517 • Patt-324, Frazier-402, and Lemoff-864 • Patt-324, Frazier-402, and Panotopolous-677 • Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopolous-677 • Thomas-623 and Frazier-402 • Thomas-623, Frazier-402, and He-343 • Thomas-623, Frazier-402, and Jayaraman-517 • Thomas-623, Frazier-402, and Lemoff-864 • Thomas-623, Frazier-402, and Panotopolous-677 • Thomas-623 and He-343 • Thomas-623 and Jayaraman-517 • Thomas-623 and Lemoff-864 • Thomas-623 and Panotopolous-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.

'106 Patent, Asserted Claims	Application of Prior Art Under § 103
Claims 2, 11, 14, 17	• BD FACSAarray System and He-343 • BD FACSAarray System and Jayaraman-517 • BD FACSAarray System and Lemoff-864 • BD FACSAarray System and Panotopoulos-677 • BD LSR II System and BD FACSAarray System • BD LSR II System, BD FACSAarray System, and He-343 • BD LSR II System, BD FACSAarray System, and Jayaraman-517 • BD LSR II System, BD FACSAarray System, and Lemoff-864 • BD LSR II System, BD FACSAarray System, and Panotopoulos-677

'106 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSR^{II} System and Frazier-402 • BD LSR^{II} System, Frazier-402, and He-343 • BD LSR^{II} System, Frazier-402, and Jayaraman-517 • BD LSR^{II} System, Frazier-402, and Lemoff-864 • BD LSR^{II} System, Frazier-402, and Panotopoulos-677 • BD LSR^{II} System and Gjelsnes-695 • BD LSR^{II} System, Gjelsnes-695, and He-343 • BD LSR^{II} System, Gjelsnes-695, and Jayaraman-517 • BD LSR^{II} System, Gjelsnes-695, and Lemoff-864 • BD LSR^{II} System, Gjelsnes-695, and Panotopoulos-677 • BD LSR^{II} System and Luminex System • BD LSR^{II} System, Luminex System, and He-343 • BD LSR^{II} System, Luminex System, and Jayaraman-517 • BD LSR^{II} System, Luminex System, and Lemoff-864 • BD LSR^{II} System, Luminex System, and Panotopoulos-677 • BD LSR^{II} System and Patt-324 • BD LSR^{II} System, Patt-324, and He-343 • BD LSR^{II} System, Patt-324, and Jayaraman-517 • BD LSR^{II} System, Patt-324, and Lemoff-864 • BD LSR^{II} System, Patt-324, and Panotopoulos-677 • BD LSR^{II} System and Stewart-2005 • BD LSR^{II} System, Stewart-2005, and He-343 • BD LSR^{II} System, Stewart-2005, and Jayaraman-517 • BD LSR^{II} System, Stewart-2005, and Lemoff-864 • BD LSR^{II} System, Stewart-2005, and Panotopoulos-677 • BD LSRFortessa System and BD FACSA^{II} System • BD LSRFortessa System, BD FACSA^{II} System, and He-343 • BD LSRFortessa System, BD FACSA^{II} System, and Jayaraman-517 • BD LSRFortessa System, BD FACSA^{II} System, and Lemoff-864 • BD LSRFortessa System, BD FACSA^{II} System, and Panotopoulos-677 • BD LSRFortessa System and Frazier-402 • BD LSRFortessa System, Frazier-402, and He-343 • BD LSRFortessa System, Frazier-402, and Jayaraman-517 • BD LSRFortessa System, Frazier-402, and Lemoff-864 • BD LSRFortessa System, Frazier-402, and Panotopoulos-677 • BD LSRFortessa System and Gjelsnes-695 • BD LSRFortessa System, Gjelsnes-695, and He-343 • BD LSRFortessa System, Gjelsnes-695, and Jayaraman-517 • BD LSRFortessa System, Gjelsnes-695, and Lemoff-864

'106 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSRFortessa System, Gjelsnes-695, and Panotopoulos-677 • BD LSRFortessa System and Luminex System • BD LSRFortessa System, Luminex System, and He-343 • BD LSRFortessa System, Luminex System, and Jayaraman-517 • BD LSRFortessa System, Luminex System, and Lemoff-864 • BD LSRFortessa System, Luminex System, and Panotopoulos-677 • BD LSRFortessa System and Patt-324 • BD LSRFortessa System, Patt-324, and He-343 • BD LSRFortessa System, Patt-324, and Jayaraman-517 • BD LSRFortessa System, Patt-324, and Lemoff-864 • BD LSRFortessa System, Patt-324, and Panotopoulos-677 • BD LSRFortessa System and Stewart-2005 • BD LSRFortessa System, Stewart-2005, and He-343 • BD LSRFortessa System, Stewart-2005, and Jayaraman-517 • BD LSRFortessa System, Stewart-2005, and Lemoff-864 • BD LSRFortessa System, Stewart-2005, and Panotopoulos-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and BD FACSArray System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Frazier-402 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Gjelsnes-695 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Luminex System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Stewart-2005 • Frazier-402 and He-343 • Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopoulos-677 • Gjelsnes-695 and He-343 • Gjelsnes-695 and Jayaraman-517 • Gjelsnes-695 and Lemoff-864 • Gjelsnes-695 and Panotopoulos-677 • Hansen-412, Frazier-402, and He-343 • Hansen-412, Frazier-402, and Jayaraman-517 • Hansen-412, Frazier-402, and Lemoff-864 • Hansen-412, Frazier-402, and Panotopoulos-677 • Ilkov-283, Frazier-402, and He-343

'106 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Ilkov-283, Frazier-402, and Jayaraman-517 • Ilkov-283, Frazier-402, and Lemoff-864 • Ilkov-283, Frazier-402, and Panotopoulos-677 • Luminex System • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopoulos-677 • Luminex System, Ilkov-283, and He-343 • Luminex System, Ilkov-283, and Jayaraman-517 • Luminex System, Ilkov-283, and Lemoff-864 • Luminex System, Ilkov-283, and Panotopoulos-677 • Oostman-537 • Oostman-537, BD FACSAarray System • Oostman-537, BD FACSAarray System, and He-343 • Oostman-537, BD FACSAarray System, and Jayaraman-517 • Oostman-537, BD FACSAarray System, and Lemoff-864 • Oostman-537, BD FACSAarray System, and Panotopoulos-677 • Oostman-537, Frazier-402, and He-343 • Oostman-537, Frazier-402, and Jayaraman-517 • Oostman-537, Frazier-402, and Lemoff-864 • Oostman-537, Frazier-402, and Panotopolous-677 • Oostman-537, Gjelsnes-695, and He-343 • Oostman-537, Gjelsnes-695, and Jayaraman-517 • Oostman-537, Gjelsnes-695, and Lemoff-864 • Oostman-537, Gjelsnes-695, and Panotopolous-677 • Oostman-537, Luminex System, and He-343 • Oostman-537, Luminex System, and Jayaraman-517 • Oostman-537, Luminex System, and Lemoff-864 • Oostman-537, Luminex System, and Panotopolous-677 • Oostman-537, Patt-324, and He-343 • Oostman-537, Patt-324, and Jayaraman-517 • Oostman-537, Patt-324, and Lemoff-864 • Oostman-537, Patt-324, and Panotopolous-677 • Oostman-537, Stewart-2005, and He-343 • Oostman-537, Stewart-2005, and Jayaraman-517 • Oostman-537, Stewart-2005, and Lemoff-864 • Oostman-537, Stewart-2005, and Panotopoulos-677 • Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopoulos-677

'106 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Stewart-2005 and He-343 • Stewart-2005 and Jayaraman-517 • Stewart-2005 and Lemoff-864 • Stewart-2005 and Panotopoulos-677 • Thomas-623, Frazier-402, and He-343 • Thomas-623, Frazier-402, and Jayaraman-517 • Thomas-623, Frazier-402, and Lemoff-864 • Thomas-623, Frazier-402, and Panotopoulos-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
Claim 1	• BD FACSArray System and Frazier-402 • BD FACSArray System and Grann-976 • BD FACSArray System and He-343 • BD FACSArray System and Jayaraman-517 • BD FACSArray System and Lemoff-864 • BD FACSArray System and Panotopoulos-677 • BD LSR II System and BD FACSArray System • BD LSR II System, BD FACSArray System, and Grann-976 • BD LSR II System, BD FACSArray System, and He-343 • BD LSR II System, BD FACSArray System, and Jayaraman-517 • BD LSR II System, BD FACSArray System, and Lemoff-864 • BD LSR II System, BD FACSArray System, and Panotopoulos-677 • BD LSR II System and Frazier-402 • BD LSR II System and Gjelsnes-695 • BD LSR II System, Gjelsnes-695, and He-343 • BD LSR II System, Gjelsnes-695, and Jayaraman-517 • BD LSR II System, Gjelsnes-695, and Lemoff-864 • BD LSR II System, Gjelsnes-695, and Panotopoulos-677 • BD LSR II System and Luminex System • BD LSR II System, Luminex System, and Grann-976 • BD LSR II System, Luminex System, and He-343 • BD LSR II System, Luminex System, and Jayaraman-517 • BD LSR II System, Luminex System, and Lemoff-864 • BD LSR II System, Luminex System, and Panotopoulos-677 • BD LSR II System and Patt-324

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSR^{II} System, Patt-324, and Grann-976 • BD LSR^{II} System, Patt-324, and He-343 • BD LSR^{II} System, Patt-324, and Jayaraman-517 • BD LSR^{II} System, Patt-324, and Lemoff-864 • BD LSR^{II} System, Patt-324, and Panotopoulos-677 • BD LSR^{II} System and Stewart-2005 • BD LSR^{II} System, Stewart-2005, and Grann-976 • BD LSR^{II} System, Stewart-2005, and He-343 • BD LSR^{II} System, Stewart-2005, and Jayaraman-517 • BD LSR^{II} System, Stewart-2005, and Lemoff-864 • BD LSR^{II} System, Stewart-2005, and Panotopoulos-677 • BD LSRFortessa System and BD FACSAArray System • BD LSRFortessa System, BD FACSAArray System, and Grann-976 • BD LSRFortessa System, BD FACSAArray System, and He-343 • BD LSRFortessa System, BD FACSAArray System, and Jayaraman-517 • BD LSRFortessa System, BD FACSAArray System, and Lemoff-864 • BD LSRFortessa System, BD FACSAArray System, and Panotopoulos-677 • BD LSRFortessa System and Frazier-402 • BD LSRFortessa System and Gjelsnes-695 • BD LSRFortessa System, Gjelsnes-695, and Grann-976 • BD LSRFortessa System, Gjelsnes-695, and He-343 • BD LSRFortessa System, Gjelsnes-695, and Jayaraman-517 • BD LSRFortessa System, Gjelsnes-695, and Lemoff-864 • BD LSRFortessa System, Gjelsnes-695, and Panotopoulos-677 • BD LSRFortessa System and Luminex System • BD LSRFortessa System, Luminex System, and Grann-976 • BD LSRFortessa System, Luminex System, and He-343 • BD LSRFortessa System, Luminex System, and Jayaraman-517 • BD LSRFortessa System, Luminex System, and Lemoff-864 • BD LSRFortessa System, Luminex System, and Panotopoulos-677 • BD LSRFortessa System and Patt-324 • BD LSRFortessa System, Patt-324, and Grann-976 • BD LSRFortessa System, Patt-324, and He-343 • BD LSRFortessa System, Patt-324, and Jayaraman-517 • BD LSRFortessa System, Patt-324, and Lemoff-864 • BD LSRFortessa System, Patt-324, and Panotopoulos-677 • BD LSRFortessa System and Stewart-2005

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSRFortessa System, Stewart-2005, and Grann-976 • BD LSRFortessa System, Stewart-2005, and He-343 • BD LSRFortessa System, Stewart-2005, and Jayaraman-517 • BD LSRFortessa System, Stewart-2005, and Lemoff-864 • BD LSRFortessa System, Stewart-2005, and Panotopoulos-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and BD FACSAArray System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Frazier-402 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Gjelsnes-695 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Luminex System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Patt-324 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Stewart-2005 • Frazier-402 • Frazier-402 and Grann-976 • Frazier-402 and He-343 • Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Oostman-537 • Frazier-402 and Panotopoulos-677 • Gjelsnes-695 and Grann-976 • Gjelsnes-695 and He-343 • Gjelsnes-695 and Jayaraman-517 • Gjelsnes-695 and Lemoff-864 • Gjelsnes-695 and Oostman-537 • Gjelsnes-695 and Panotopoulos-677 • Luminex System • Luminex System and Frazier-402 • Luminex System and Grann-976 • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopoulos-677 • Oostman-537 • Oostman-537 and BD FACSAArray System • Oostman-537, BD FACSAArray System, and Grann-976

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Oostman-537, BD FACSAarray System, and He-343 • Oostman-537, BD FACSAarray System, and Jayaraman-517 • Oostman-537, BD FACSAarray System, and Lemoff-864 • Oostman-537, BD FACSAarray System, and Panotopoulos-677 • Oostman-537 and Frazier-402 • Oostman-537, Frazier-402, and Grann-976 • Oostman-537, Frazier-402, and He-343 • Oostman-537, Frazier-402, and Jayaraman-517 • Oostman-537, Frazier-402, and Lemoff-864 • Oostman-537, Frazier-402, and Panotopoulos-677 • Oostman-537 and Luminex System • Oostman-537, Luminex System, and Grann-976 • Oostman-537, Luminex System, and He-343 • Oostman-537, Luminex System, and Jayaraman-517 • Oostman-537, Luminex System, and Lemoff-864 • Oostman-537, Luminex System, and Panotopoulos-677 • Oostman-537 and Patt-324 • Oostman-537, Patt-324, and Grann-976 • Oostman-537, Patt-324, and He-343 • Oostman-537, Patt-324, and Jayaraman-517 • Oostman-537, Patt-324, and Lemoff-864 • Oostman-537, Patt-324, and Panotopoulos-677 • Oostman-537 and Stewart-2005 • Oostman-537, Stewart-2005, and Grann-976 • Oostman-537, Stewart-2005, and He-343 • Oostman-537, Stewart-2005, and Jayaraman-517 • Oostman-537, Stewart-2005, and Lemoff-864 • Oostman-537, Stewart-2005, and Panotopoulos-677 • Patt-324 and Frazier-402 • Patt-324 and Grann-976 • Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopoulos-677 • Stewart-2005 and Frazier-402 • Stewart-2005 and Grann-976 • Stewart-2005 and He-343 • Stewart-2005 and Jayaraman-517 • Stewart-2005 and Lemoff-864 • Stewart-2005 and Panotopoulos-677 Each of the foregoing combinations may also be supplemented with the

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	knowledge of a person of ordinary skill in the art.
Claims 3, 5	• BD FACSAArray System and He-343 • BD FACSAArray System and Jayaraman-517 • BD FACSAArray System and Lemoff-864 • BD FACSAArray System and Panotopoulos-677 • BD LSR II System and BD FACSAArray System • BD LSR II System, BD FACSAArray System, and He-343 • BD LSR II System, BD FACSAArray System, and Jayaraman-517 • BD LSR II System, BD FACSAArray System, and Lemoff-864 • BD LSR II System, BD FACSAArray System, and Panotopoulos-677 • BD LSR II System and Frazier-402 • BD LSR II System, Frazier-402, and He-343 • BD LSR II System, Frazier-402, and Jayaraman-517 • BD LSR II System, Frazier-402, and Lemoff-864 • BD LSR II System, Frazier-402, and Panotopoulos-677 • BD LSR II System and Gjelsnes-695 • BD LSR II System, Gjelsnes-695, and He-343 • BD LSR II System, Gjelsnes-695, and Jayaraman-517 • BD LSR II System, Gjelsnes-695, and Lemoff-864 • BD LSR II System, Gjelsnes-695, and Panotopoulos-677 • BD LSR II System and Luminex System • BD LSR II System, Luminex System, and He-343 • BD LSR II System, Luminex System, and Jayaraman-517 • BD LSR II System, Luminex System, and Lemoff-864 • BD LSR II System, Luminex System, and Panotopoulos-677 • BD LSR II System and Patt-324 • BD LSR II System, Patt-324, and He-343 • BD LSR II System, Patt-324, and Jayaraman-517 • BD LSR II System, Patt-324, and Lemoff-864 • BD LSR II System, Patt-324, and Panotopoulos-677 • BD LSR II System and Stewart-2005 • BD LSR II System, Stewart-2005, and He-343 • BD LSR II System, Stewart-2005, and Jayaraman-517 • BD LSR II System, Stewart-2005, and Lemoff-864 • BD LSR II System, Stewart-2005, and Panotopoulos-677 • BD LSRFortessa System and BD FACSAArray System • BD LSRFortessa System, BD FACSAArray System, and He-343 • BD LSRFortessa System, BD FACSAArray System, and Jayaraman-517 • BD LSRFortessa System, BD FACSAArray System, and Lemoff-

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	864 • BD LSRFortessa System, BD FACSAArray System, and Panotopoulos-677 • BD LSRFortessa System and Frazier-402 • BD LSRFortessa System, Frazier-402, and He-343 • BD LSRFortessa System, Frazier-402, and Jayaraman-517 • BD LSRFortessa System, Frazier-402, and Lemoff-864 • BD LSRFortessa System, Frazier-402, and Panotopoulos-677 • BD LSRFortessa System and Gjelsnes-695 • BD LSRFortessa System, Gjelsnes-695, and He-343 • BD LSRFortessa System, Gjelsnes-695, and Jayaraman-517 • BD LSRFortessa System, Gjelsnes-695, and Lemoff-864 • BD LSRFortessa System, Gjelsnes-695, and Panotopoulos-677 • BD LSRFortessa System and Luminex System • BD LSRFortessa System, Luminex System, and He-343 • BD LSRFortessa System, Luminex System, and Jayaraman-517 • BD LSRFortessa System, Luminex System, and Lemoff-864 • BD LSRFortessa System, Luminex System, and Panotopoulos-677 • BD LSRFortessa System and Patt-324 • BD LSRFortessa System, Patt-324, and He-343 • BD LSRFortessa System, Patt-324, and Jayaraman-517 • BD LSRFortessa System, Patt-324, and Lemoff-864 • BD LSRFortessa System, Patt-324, and Panotopoulos-677 • BD LSRFortessa System and Stewart-2005 • BD LSRFortessa System, Stewart-2005, and He-343 • BD LSRFortessa System, Stewart-2005, and Jayaraman-517 • BD LSRFortessa System, Stewart-2005, and Lemoff-864 • BD LSRFortessa System, Stewart-2005, and Panotopoulos-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and BD FACSAArray System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Frazier-402 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Gjelsnes-695 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Luminex System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Patt-324 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Stewart-2005 • Frazier-402 and He-343

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopoulos-677 • Gjelsnes-695 and He-343 • Gjelsnes-695 and Jayaraman-517 • Gjelsnes-695 and Lemoff-864 • Gjelsnes-695 and Panotopoulos-677 • Luminex System • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopoulos-677 • Luminex System, Ilkov-283, and He-343 • Luminex System, Ilkov-283, and Jayaraman-517 • Luminex System, Ilkov-283, and Lemoff-864 • Luminex System, Ilkov-283, and Panotopoulos-677 • Oostman-537 • Oostman-537, BD FACSArray System • Oostman-537, BD FACSArray System, and He-343 • Oostman-537, BD FACSArray System, and Jayaraman-517 • Oostman-537, BD FACSArray System, and Lemoff-864 • Oostman-537, BD FACSArray System, and Panotopoulos-677 • Oostman-537, Frazier-402, and He-343 • Oostman-537, Frazier-402, and Jayaraman-517 • Oostman-537, Frazier-402, and Lemoff-864 • Oostman-537, Frazier-402, and Panotopolous-677 • Oostman-537, Gjelsnes-695, and He-343 • Oostman-537, Gjelsnes-695, and Jayaraman-517 • Oostman-537, Gjelsnes-695, and Lemoff-864 • Oostman-537, Gjelsnes-695, and Panotopolous-677 • Oostman-537, Luminex System, and He-343 • Oostman-537, Luminex System, and Jayaraman-517 • Oostman-537, Luminex System, and Lemoff-864 • Oostman-537, Luminex System, and Panotopolous-677 • Oostman-537, Patt-324, and He-343 • Oostman-537, Patt-324, and Jayaraman-517 • Oostman-537, Patt-324, and Lemoff-864 • Oostman-537, Patt-324, and Panotopolous-677 • Oostman-537, Stewart-2005, and He-343 • Oostman-537, Stewart-2005, and Jayaraman-517 • Oostman-537, Stewart-2005, and Lemoff-864 • Oostman-537, Stewart-2005, and Panotopoulos-677

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopoulos-677 • Stewart-2005 and He-343 • Stewart-2005 and Jayaraman-517 • Stewart-2005 and Lemoff-864 • Stewart-2005 and Panotopoulos-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.
Claims 7, 9, 14, 16, 17, 18	• BD FACSArry System and He-343 • BD FACSArry System and Jayaraman-517 • BD FACSArry System and Lemoff-864 • BD FACSArry System and Panotopoulos-677 • BD LSRII System and BD FACSArry System • BD LSRII System, BD FACSArry System, and He-343 • BD LSRII System, BD FACSArry System, and Jayaraman-517 • BD LSRII System, BD FACSArry System, and Lemoff-864 • BD LSRII System, BD FACSArry System, and Panotopoulos-677 • BD LSRII System and Frazier-402 • BD LSRII System, Frazier-402, and He-343 • BD LSRII System, Frazier-402, and Jayaraman-517 • BD LSRII System, Frazier-402, and Lemoff-864 • BD LSRII System, Frazier-402, and Panotopoulos-677 • BD LSRII System and Gjelsnes-695 • BD LSRII System, Gjelsnes-695, and He-343 • BD LSRII System, Gjelsnes-695, and Jayaraman-517 • BD LSRII System, Gjelsnes-695, and Lemoff-864 • BD LSRII System, Gjelsnes-695, and Panotopoulos-677 • BD LSRII System and Luminex System • BD LSRII System, Luminex System, and He-343 • BD LSRII System, Luminex System, and Jayaraman-517 • BD LSRII System, Luminex System, and Lemoff-864 • BD LSRII System, Luminex System, and Panotopoulos-677 • BD LSRII System and Patt-324 • BD LSRII System, Patt-324, and He-343 • BD LSRII System, Patt-324, and Jayaraman-517 • BD LSRII System, Patt-324, and Lemoff-864 • BD LSRII System, Patt-324, and Panotopoulos-677

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSR^{II} System and Stewart-2005 • BD LSR^{II} System, Stewart-2005, and He-343 • BD LSR^{II} System, Stewart-2005, and Jayaraman-517 • BD LSR^{II} System, Stewart-2005, and Lemoff-864 • BD LSR^{II} System, Stewart-2005, and Panotopoulos-677 • BD LSRFortessa System and BD FACSAArray System • BD LSRFortessa System, BD FACSAArray System, and He-343 • BD LSRFortessa System, BD FACSAArray System, and Jayaraman-517 • BD LSRFortessa System, BD FACSAArray System, and Lemoff-864 • BD LSRFortessa System, BD FACSAArray System, and Panotopoulos-677 • BD LSRFortessa System and Frazier-402 • BD LSRFortessa System, Frazier-402, and He-343 • BD LSRFortessa System, Frazier-402, and Jayaraman-517 • BD LSRFortessa System, Frazier-402, and Lemoff-864 • BD LSRFortessa System, Frazier-402, and Panotopoulos-677 • BD LSRFortessa System and Gjelsnes-695 • BD LSRFortessa System, Gjelsnes-695, and He-343 • BD LSRFortessa System, Gjelsnes-695, and Jayaraman-517 • BD LSRFortessa System, Gjelsnes-695, and Lemoff-864 • BD LSRFortessa System, Gjelsnes-695, and Panotopoulos-677 • BD LSRFortessa System and Luminex System • BD LSRFortessa System, Luminex System, and He-343 • BD LSRFortessa System, Luminex System, and Jayaraman-517 • BD LSRFortessa System, Luminex System, and Lemoff-864 • BD LSRFortessa System, Luminex System, and Panotopoulos-677 • BD LSRFortessa System and Patt-324 • BD LSRFortessa System, Patt-324, and He-343 • BD LSRFortessa System, Patt-324, and Jayaraman-517 • BD LSRFortessa System, Patt-324, and Lemoff-864 • BD LSRFortessa System, Patt-324, and Panotopoulos-677 • BD LSRFortessa System and Stewart-2005 • BD LSRFortessa System, Stewart-2005, and He-343 • BD LSRFortessa System, Stewart-2005, and Jayaraman-517 • BD LSRFortessa System, Stewart-2005, and Lemoff-864 • BD LSRFortessa System, Stewart-2005, and Panotopoulos-677 • Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and BD FACSAArray System • Cytex's Curved-Mirror DxP Wavelength Division

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	(de)Multiplexer Detectors and Frazier-402 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Gjelsnes-695 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Luminex System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Patt-324 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Stewart-2005 • Ilkov-283, Frazier-402, and He-343 • Ilkov-283, Frazier-402, and Jayaraman-517 • Ilkov-283, Frazier-402, and Lemoff-864 • Ilkov-283, Frazier-402, and Panotopoulos-677 • Frazier-402 and He-343 • Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopoulos-677 • Gjelsnes-695 and Jayaraman-517 • Gjelsnes-695 and Lemoff-864 • Gjelsnes-695 and Panotopoulos-677 • Luminex System • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopoulos-677 • Luminex System, Ilkov-283, and He-343 • Luminex System, Ilkov-283, and Jayaraman-517 • Luminex System, Ilkov-283, and Lemoff-864 • Luminex System, Ilkov-283, and Panotopoulos-677 • Luminex System, Patt-324, and He-343 • Luminex System, Patt-324, and Jayaraman-517 • Luminex System, Patt-324, and Lemoff-864 • Luminex System, Patt-324, and Panotopoulos-677 • Luminex System, Thomas-623, and He-343 • Luminex System, Thomas-623, and Jayaraman-517 • Luminex System, Thomas-623, and Lemoff-864 • Luminex System, Thomas-623, and Panotopoulos-677 • Oostman-537 • Oostman-537, BD FACSAarray System • Oostman-537, BD FACSAarray System, and He-343 • Oostman-537, BD FACSAarray System, and Jayaraman-517 • Oostman-537, BD FACSAarray System, and Lemoff-864

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Oostman-537, BD FACSAArray System, and Panotopoulos-677 • Oostman-537, Frazier-402, and He-343 • Oostman-537, Frazier-402, and Jayaraman-517 • Oostman-537, Frazier-402, and Lemoff-864 • Oostman-537, Frazier-402, and Panotopolous-677 • Oostman-537, Luminex System, and He-343 • Oostman-537, Luminex System, and Jayaraman-517 • Oostman-537, Luminex System, and Lemoff-864 • Oostman-537, Luminex System, and Panotopolous-677 • Oostman-537, Patt-324, and He-343 • Oostman-537, Patt-324, and Jayaraman-517 • Oostman-537, Patt-324, and Lemoff-864 • Oostman-537, Patt-324, and Panotopolous-677 • Oostman-537, Stewart-2005, and He-343 • Oostman-537, Stewart-2005, and Jayaraman-517 • Oostman-537, Stewart-2005, and Lemoff-864 • Oostman-537, Stewart-2005, and Panotopoulos-677 • Thomas-623, Frazier-402, and He-343 • Thomas-623, Frazier-402, and Jayaraman-517 • Thomas-623, Frazier-402, and Lemoff-864 • Thomas-623, Frazier-402, and Panotopoulos-677 • Patt-324 and He-343 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopoulos-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.
Claims 10, 11, 12, 26, 27, 29, 30	• BD FACSAArray System and Jayaraman-517 • BD FACSAArray System and Lemoff-864 • BD FACSAArray System and Panotopoulos-677 • BD LSRII System, BD FACSAArray System, and Jayaraman-517 • BD LSRII System, BD FACSAArray System, and Lemoff-864 • BD LSRII System, BD FACSAArray System, and Panotopoulos-677 • BD LSRII System, Frazier-402, and Jayaraman-517 • BD LSRII System, Frazier-402, and Lemoff-864 • BD LSRII System, Frazier-402, and Panotopoulos-677 • BD LSRII System, Gjelsnes-695, and Jayaraman-517 • BD LSRII System, Gjelsnes-695, and Lemoff-864 • BD LSRII System, Gjelsnes-695, and Panotopoulos-677

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• BD LSR^{II} System and Luminex System • BD LSR^{II} System, Luminex System, and He-343 • BD LSR^{II} System, Luminex System, and Jayaraman-517 • BD LSR^{II} System, Luminex System, and Lemoff-864 • BD LSR^{II} System, Luminex System, and Panotopoulos-677 • BD LSR^{II} System, Patt-324, and Jayaraman-517 • BD LSR^{II} System, Patt-324, and Lemoff-864 • BD LSR^{II} System, Patt-324, and Panotopoulos-677 • BD LSR^{II} System, Stewart-2005, and Jayaraman-517 • BD LSR^{II} System, Stewart-2005, and Lemoff-864 • BD LSR^{II} System, Stewart-2005, and Panotopoulos-677 • BD LSRFortessa System, BD FACSA^{II} System, and Jayaraman-517 • BD LSRFortessa System, BD FACSA^{II} System, and Lemoff-864 • BD LSRFortessa System, BD FACSA^{II} System, and Panotopoulos-677 • BD LSRFortessa System, Frazier-402, and Jayaraman-517 • BD LSRFortessa System, Frazier-402, and Lemoff-864 • BD LSRFortessa System, Frazier-402, and Panotopoulos-677 • BD LSRFortessa System, Gjelsnes-695, and Jayaraman-517 • BD LSRFortessa System, Gjelsnes-695, and Lemoff-864 • BD LSRFortessa System, Gjelsnes-695, and Panotopoulos-677 • BD LSRFortessa System, Patt-324, and Jayaraman-517 • BD LSRFortessa System, Patt-324, and Lemoff-864 • BD LSRFortessa System, Patt-324, and Panotopoulos-677 • BD LSRFortessa System and Luminex System • BD LSRFortessa System, Luminex System, and Jayaraman-517 • BD LSRFortessa System, Luminex System, and Lemoff-864 • BD LSRFortessa System, Luminex System, and Panotopoulos-677 • BD LSRFortessa System, Stewart-2005, and Jayaraman-517 • BD LSRFortessa System, Stewart-2005, and Lemoff-864 • BD LSRFortessa System, Stewart-2005, and Panotopoulos-677 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and BD FACSA^{II} System • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Frazier-402 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Gjelsnes-695 • Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Luminex System

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Patt-324 • Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors and Stewart-2005 • Ilkov-283, Frazier-402, and Jayaraman-517 • Ilkov-283, Frazier-402, and Lemoff-864 • Ilkov-283, Frazier-402, and Panotopoulos-677 • Frazier-402 and Jayaraman-517 • Frazier-402 and Lemoff-864 • Frazier-402 and Panotopoulos-677 • Gjelsnes-695 and Jayaraman-517 • Gjelsnes-695 and Lemoff-864 • Gjelsnes-695 and Panotopoulos-677 • Luminex System and He-343 • Luminex System and Jayaraman-517 • Luminex System and Lemoff-864 • Luminex System and Panotopoulos-677 • Luminex System, Ilkov-283, and He-343 • Luminex System, Ilkov-283, and Jayaraman-517 • Luminex System, Ilkov-283, and Lemoff-864 • Luminex System, Ilkov-283, and Panotopoulos-677 • Luminex System, Patt-324, and He-343 • Luminex System, Patt-324, and Jayaraman-517 • Luminex System, Patt-324, and Lemoff-864 • Luminex System, Patt-324, and Panotopoulos-677 • Luminex System, Thomas-623, and He-343 • Luminex System, Thomas-623, and Jayaraman-517 • Luminex System, Thomas-623, and Lemoff-864 • Luminex System, Thomas-623, and Panotopoulos-677 • Oostman-537, BD FACSAArray System, and Jayaraman-517 • Oostman-537, BD FACSAArray System, and Lemoff-864 • Oostman-537, BD FACSAArray System, and Panotopoulos-677 • Oostman-537, Frazier-402, and Jayaraman-517 • Oostman-537, Frazier-402, and Lemoff-864 • Oostman-537, Frazier-402, and Panotopolous-677 • Oostman-537, Gjelsnes-695, and Jayaraman-517 • Oostman-537, Gjelsnes-695, and Lemoff-864 • Oostman-537, Gjelsnes-695, and Panotopolous-677 • Oostman-537, Patt-324, and Jayaraman-517 • Oostman-537, Patt-324, and Lemoff-864 • Oostman-537, Patt-324, and Panotopolous-677 • Oostman-537, Luminex System, and Jayaraman-517

'107 Patent, Asserted Claims	Application of Prior Art Under § 103
	• Oostman-537, Luminex System, and Lemoff-864 • Oostman-537, Luminex System, and Panotopolous-677 • Oostman-537, Stewart-2005, and Jayaraman-517 • Oostman-537, Stewart-2005, and Lemoff-864 • Oostman-537, Stewart-2005, and Panotopoulos-677 • Thomas-623, Frazier-402, and Jayaraman-517 • Thomas-623, Frazier-402, and Lemoff-864 • Thomas-623, Frazier-402, and Panotopoulos-677 • Patt-324 and Jayaraman-517 • Patt-324 and Lemoff-864 • Patt-324 and Panotopoulos-677 • Stewart-2005 and Jayaraman-517 • Stewart-2005 and Lemoff-864 • Stewart-2005 and Panotopoulos-677 Each of the foregoing combinations may also be supplemented with the knowledge of a person of ordinary skill in the art.

G. Claim Charts

Subject to Cytek's reservation of rights, attached hereto as **Exhibits A-1 through A-24, B-1 through B-24, C-1 through C-24, and D-1 through D-24**, and identified in **Appendix B**, incorporated by reference, are claim charts providing a limitation-by-limitation analysis of where specifically in each prior art item each limitation of the Asserted Claims of the Asserted Patents is found. Any reference to a figure in cited text incorporates by reference the figure itself, and any citation to a figure incorporates by reference any description of that figure in a reference.

As noted above, these claim charts are based on Cytek's understanding of the claim terms as interpreted by Beckman Coulter in its Infringement Contentions—even though Cytek does not necessarily agree with those constructions and reserves the right to dispute them—and/or Cytek's potential constructions. Cytek reserves the right to supplement or modify these Invalidity Contentions in conjunction with the Court's rulings on claim construction. To the extent any limitation is deemed not to be met exactly by an item of prior art, Cytek contends that the difference

would have been obvious to a person of ordinary skill in the art and within the knowledge of one skilled in the art at the time of the alleged invention, so that the claimed invention would have been obvious both in light of the single reference alone and/or in light of combined references. Cytek does not admit or concede that the element is not expressly or inherently disclosed by the reference at issue.

As a general matter, all portions of each prior art item are relied upon to support the disclosure of each patent claim limitation, as all portions provide general support. Supporting citations are nevertheless provided, but do not necessarily represent every location where a particular claim term may be found in the prior art item. Cytek reserves the right to rely on additional, or different, portions of the prior art items other than those specifically cited in these claim charts, and to supplement and/or amend these charts.

H. The Asserted Claims Are Invalid Under Pre-AIA 35 U.S.C. § 102(g)

To the extent any of the patents contains or contained at any time a claimed invention having an effective filing date that occurs before March 16, 2013, Cytek further asserts the Asserted Claims are invalid under § 102(g) based on Cytek's prior invention of its Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors, including one or more upgrades made commercially available during the prior art time period, either alone or in combination with other prior art, as identified in Section F.i.d above. Information supporting the design, development, and commercial release of Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors may be found in **Exhibits A-22, B-22, C-22, and D-22**, incorporated here by reference. Pursuant to § 5(a) of the Scheduling Order, Cytek identifies Cytek as the involved entity and the following individuals involved in the development of Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors: Eric Chase, Barry Walter, and Greg Matson.

I. Secondary Considerations

Beckman Coulter bears the burden of establishing the existence of secondary considerations and the requisite nexus to the claimed inventions. To date, Beckman Coulter has not disclosed that any secondary considerations support any alleged non-obviousness of the Asserted Claims. To the extent that Beckman Coulter subsequently discloses any contention that any secondary considerations support a conclusion that any of the Asserted Claims are not obvious, Cytex reserves the right to respond, including to amend and/or supplement these Invalidity Contentions. Moreover, as these Invalidity Contentions demonstrate, none of the Asserted Claims address any need that was either long felt or unmet, nor were their results unexpected.

To the contrary, the extensive invalidating prior art detailed above and in the claim charts show that before the patents-in-suit, the prior art techniques, designs, and systems were widely accepted, understood, and available. Several cited references, including the BD FACSAria System, BD LSRII System, BD LSRII Fortessa System, Luminex System, and Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors demonstrate simultaneous invention that serves as an objective indicia of obviousness. Finally, although secondary considerations may be relevant to the obviousness analysis, secondary considerations of nonobviousness cannot overcome the strong prima facie case of obviousness set forth in these Invalidity Contentions.

The Asserted Claims are Invalid under 35 U.S.C. § 112 For Indefiniteness, Lack of Written Description, and/or Lack of Enablement

To be valid, a patent claim must "particularly point [] out and distinctly claim[] the subject matter which the inventor . . . regards as the invention." 35 U.S.C. § 112(2). The Supreme Court has held that the proper standard for indefiniteness is as follows: "[A] patent is invalid for indefiniteness if its claims, read in light of the specification delineating the patent, and the prosecution history, fail to inform, with reasonable certainty, those skilled in the art about the scope

of the invention.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. 2120, 2124, 189 L. Ed. 2d 37 (2014). The Supreme Court further explained that “a patent must be precise enough to afford clear notice of what is claimed, thereby apprising the public of what is still open to them.” *Id.* at 2129.

To uphold claims that do not clearly define the scope of the invention would thwart the ultimate purpose of the patent laws: to “promote the Progress of Science and useful Arts.” *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co.*, 535 U.S. 722, 730 (2002) (quoting U.S. Const. art. I, § 8, cl. 8). As the Supreme Court explained in *Festo*, a patent claim “is a property right; and like any property right, its boundaries should be clear. This clarity is essential to promote progress, because it enables efficient investment in innovation. A patent holder should know what he owns, and the public should know what he does not.” *Id.* The identified claim terms of Beckman Coulter’s Asserted Claims “fall[] within the innovation-discouraging ‘zone of uncertainty’ against which the Supreme Court has warned.” *Interval Licensing LLC v. AOL, Inc.*, 766 F. 3d 1364, 1374 (Fed. Cir. 2014), quoting *Nautilus*, 134 S. Ct. at 2130 (internal quotations and brackets omitted).

The Asserted Claims suffer from similar defects that may render them indefinite, at least under Beckman Coulter’s apparent view of the claim scope. Beckman Coulter’s Initial Infringement Contentions further indicate that Beckman Coulter may interpret the claims in a manner that further renders them indefinite, particularly in view of the absence of sufficient supporting disclosure in the intrinsic evidence.

Cytek also notes that the attached claim charts identify disclosures in the prior art that correspond to limitations of the Asserted Claims; in some cases, Cytek has identified prior art disclosures corresponding to limitations separately identified below as being potentially indefinite. The identification of corresponding disclosures in the prior art for such limitations should not be

construed as a concession that Cytek believes those limitations fulfill the definiteness requirement, or inform persons of ordinary skill in the art of the metes-and-bounds of the full scope of the alleged invention with reasonable certainty. Rather, Cytek's prior art disclosures are based on its best understanding (without the benefit of claim construction by the Court) informed by the Initial Infringement Contentions served by Beckman Coulter, and in some cases, were chosen because they most closely mirror exemplary embodiments in the specifications of the Asserted Patents (and thus are likely to meet the disputed claim limitations in the event they are not adjudged to be indefinite).

In view of the foregoing, Cytek identifies below potential grounds of invalidity for indefiniteness, which Cytek reserves the right to present during claim construction proceedings and/or summary judgment proceedings in this action. Cytek provides these contentions without the benefit of upcoming claim construction discovery and other ongoing discovery. Cytek may provide proposed claim constructions to be adopted in the alternative to the extent certain claim terms and elements are not determined to be indefinite. Where a certain claim term or limitation in one claim is identified as indefinite, Cytek contends that the same claim term or limitation is indefinite in every instance the term or limitation is recited throughout the Asserted Claims. Where Cytek has identified a phrase as indefinite, Cytek also contends that the subparts of the phrase are indefinite within the context recited in the claim.

For the written description requirement, "the test for sufficiency is whether the disclosure of the application relied upon reasonably conveys to those skilled in the art that the inventor had possession of the claimed subject matter as of the filing date." *Ariad Pharms. v. Eli Lilly & Co.*, 598 F.3d 1336, 1351 (Fed. Cir. 2010) (en banc). Possession requires a "show[ing] that the inventor actually invented the invention claimed." *Id.* The "level of detail required to satisfy the written

description requirement varies depending on the nature and scope of the claims and on the complexity and predictability of the relevant technology.” *Id.* “[T]he purpose of the written description requirement is to ‘ensure that the scope of the right to exclude, as set forth in the claims, does not overreach the scope of the inventor’s contribution to the field of art as described in the patent specification.’” *ICU Med., Inc. v. Alaris Med. Sys., Inc.*, 558 F.3d 1368, 1376-79 (Fed. Cir. 2009) (citations omitted).

The Asserted Claims are invalid for lack of written description where indicated below, including under the reasoning of precedent such as *Ariad*, *ICU Medical*, *Synthes USA, LLC v. Spinal Kinetics, Inc.*, 734 F.3d 1332, 1341-45 (Fed. Cir. 2013), *LizardTech, Inc. v. Earth Resource Mapping, Inc.*, 424 F.3d 1336, 1343-48 (Fed. Cir. 2005), *Liebel-Flarsheim Co. v. Medrad, Inc.*, 358 F.3d 898, 905-914 (Fed. Cir. 2004), and other case law, because the specification does not contain a written description of the claimed subject matter.

For example, in *LizardTech*, the claim was directed to a method of compressing digital images using seamless discrete wavelet transformation (“DWT”). The court found that the claim covered all ways of performing DWT-based compression processes that lead to a seamless DWT because there were no limitations as to how the seamless DWT was to be accomplished. However, the specification provided only one method for creating a seamless DWT, and there was no evidence that the specification contemplated a more generic way of creating a seamless array of DWT coefficients. Therefore, the written description requirement was not satisfied in this case because the specification did not provide sufficient evidence that the inventor invented the generic claim. “[T]he description of one method for creating a seamless DWT does not entitle the inventor . . . to claim any and all means for achieving that objective.” *LizardTech*, 424 F.3d at 1346.

Similarly, in *ICU Medical*, the written description described the use of valves with a spike,

but the patent applicant later prosecuted claims with a “spikeless” claim scope that “do not require a spike.” *ICU Med.*, 558 F.3d at 1377. As the Federal Circuit explained:

ICU’s asserted spikeless claims are broader than its asserted spike claims because they do not include a spike limitation; these spikeless claims thus refer to medical valves generically—covering those valves that operate with a spike and those that operate without a spike. But the specification describes only medical valves with spikes. See *supra* Part I. We reject ICU’s contention that the figures and descriptions that include spikes somehow demonstrate that the inventor possessed a medical valve that operated without a spike. Based on this disclosure, a person of skill in the art would not understand the inventor of the ‘509 and ‘592 patents to have invented a spikeless medical valve.

Id. at 1378. Because the specification did not disclose subject matter that operated without a spike, the Federal Circuit affirmed summary judgment of invalidity for failure to satisfy the written description requirement. *Id.* at 1379.

In *Synthes USA*, as further illustration, the written description described only certain subject matter including “a plurality of grooves and a plurality of channels, but did not describe ‘openings’ generally.” *Synthes USA*, 734 F.3d at 1341. The applicant broadened the claim scope during prosecution to a more general claim scope, in an attempt to read the claims on a competitor’s product. *Id.* A jury found invalidity for lack of written description, and the Federal Circuit affirmed. The Federal Circuit found that the evidence supported a finding that “the as-filed disclosure did not demonstrate possession of an intervertebral implant that employed *any sort* of openings *anywhere* on the cover plates.” *Id.* (emphasis in original). The Federal Circuit noted that the written description “never discloses anything broader than using grooves to anchor the fiber system to the cover plates.” *Id.*

The “enablement requirement is satisfied when one skilled in the art, after reading the specification, could practice the claimed invention without undue experimentation.” *Auto. Techs. Int’l, Inc. v. BMW of N. Am.*, 501 F.3d 1274, 1282 (Fed. Cir. 2007). A claimed invention may be invalid under § 112 for lack of written description and non-enablement even if it was disclosed in

the prior art: “It is the specification, not the knowledge of one skilled in the art, that must supply the novel aspects of an invention in order to constitute adequate enablement.” *Genentech v. Novo Nordisk*, 108 F.3d 1361, 1366 (Fed. Cir. 1997). The patentee is “required to provide an adequate enabling disclosure in the specification; it cannot simply rely on the knowledge of a person of ordinary skill to serve as a substitute for the missing information in the specification.” *Alza Corp. v. Andrx Pharms., LLC*, 603 F.3d 935, 940-41 (Fed. Cir. 2010). “A patentee who chooses broad claim language must make sure the broad claims are fully enabled.” *Sitrick v. Dreamworks, LLC*, 516 F.3d 993, 999-1000 (Fed. Cir. 2008). As the Federal Circuit has explained:

Enablement serves the dual function in the patent system of ensuring adequate disclosure of the claimed invention and of preventing claims broader than the disclosed invention. This important doctrine prevents both inadequate disclosure of an invention and overbroad claiming that might otherwise attempt to cover more than was actually invented. Thus, a patentee chooses broad claim language at the peril of losing any claim that cannot be enabled across its full scope of coverage.

MagSil Corp. v. Hitachi Global Storage Techs., 687 F.3d 1377, 1381 (Fed. Cir. 2012). “The specification must contain sufficient disclosure to enable an ordinarily skilled artisan to make and use the entire scope of the claimed invention at the time of filing.” *Id.* at 1381-82.

The claims are invalid for enablement because the written descriptions do not enable the full scope of the claimed subject matter. *Amgen Inc. v. Sanofi*, 598 U.S. 594, 610 (2023); *Liebel-Flarsheim Co. v. Medrad, Inc.*, 481 F.3d 1371 (Fed. Cir. 2007); *Automotive Techs.*, 501 F.3d at 1284-85; *Sitrick*, 516 F.3d at 999-1000; *MagSil*, 687 F.3d at 1380-81. In *Liebel-Flarsheim*, for example, the claimed invention was a front-loading fluid injector system with a replaceable syringe capable of withstanding high pressure for delivering a contrast agent to a patient. *Liebel-Flarsheim*, 481 F.3d at 1373. The claims were construed to cover systems with or without a pressure jacket, but the written description failed to enable “both injector systems with and without a pressure jacket.” *Automotive Techs.*, 501 F.3d at 1285 (citation omitted).

Similarly, in *Automotive Techs.*, the claims covered “both mechanical and electronic side impact sensors,” but the specification failed to enable the full scope: “in order to fulfill the enablement requirement, the specification must enable the full scope of the claims that includes both electronic and mechanical side impact sensors, which the specification fails to do.” *Id.*

In *Sitrick*, the claims were broad enough to cover integrating signals into pre-existing media: “Because the asserted claims are broad enough to cover both movies and video games; the patents must enable both embodiments.” *Sitrick*, 516 F.3d at 999-1000. The specification failed to enable embodiments using movies: “one skilled in the art could not take the disclosure in the specification with respect to substitution or integration of user images in video games and substitute a user image for a pre-existing character image in movies without undue experimentation.” *Id.* at 1000. *See also, e.g., MagSil*, 687 F.3d at 1381-84 (the claims covered a broad range of resistive charge that the written description did not enable); *Alza*, 603 F.3d at 940-943 (“ALZA’s patent specification does not enable the full scope of the claims, namely non-osmotic oral dosage forms with ascending release rates”).

In view of the foregoing, Cytek identifies below the following grounds of invalidity under § 112. Cytek provides these contentions without the benefit of upcoming claim construction discovery and other ongoing discovery. These § 112 contentions reflect that Beckman Coulter’s apparent asserted scope of the claim language as reflected in Beckman Coulter’s Initial Infringement Contentions suggests a broader scope than the specification sufficiently supports, though at this stage Beckman Coulter has not yet disclosed its claim construction positions to be disclosed in upcoming claim construction discovery. Discovery is in its early stages, and Cytek’s analysis and investigation continues. Cytek accordingly reserves the right to amend these disclosures in view of further discovery, information, and/or analysis.

Where a certain claim term or limitation in one claim is identified as being subject to a § 112 invalidity defect, Cytek contends that the same claim term or limitation, and each constituent phrase and term containing substantially the same claim limitation, is subject to the same defect in every instance the term or limitation is recited throughout the Asserted Claims. Furthermore, each ground of invalidity under § 112 for any identified claim also applies to any asserted claim that depends from it.

The following terms render the Asserted Claims invalid for indefiniteness, lack of written description, and/or lack of full scope enablement:

Claim Term	§ 112 Challenge Ground	Exemplary Description
array of [mirrors / filters / APDs] ('107 Patent, cl. 1)	Indefinite	A POSA would be unable to ascertain with reasonable certainty what the term “array” means in view of the specification and the context of the claims, or how “array” is distinguishable from, <i>e.g.</i> , “row” as claimed elsewhere.
collecting optical element ('106 Patent, cls. 1, 13, 18)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record the full scope of the term “collecting optical element.” Alternatively, if this limitation is construed under means-plus-function, there lacks structure for a “collecting optical element” that “detect[s] scattered light” disclosed in the specification.

Claim Term	§ 112 Challenge Ground	Exemplary Description
collimating optical element ('582 Patent, cls. 1, 14, 20; '106 Patent, cls. 1, 13, 18)	Indefinite, lack of full scope enablement, lack of written description support	The specification identifies two distinct structures of “a collimating optical element” without providing guidance as to which structure applies to the claim(s). The choice of a particular structure over the other will materially alter the claim scope. Moreover, Beckman Coulter alleges in its infringement contentions that certain structures and/or compositions of structures within the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
collimating / collimate ('582 Patent, cls. 1, 14, 20; '106 Patent, cls. 1, 13, 18)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by the term “collimate,” as, for example, the specification admits that collimation cannot be achieved for a non-point source of light and yet the claims recite collimation. Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
collimated beam ('443 Patent, cl. 10; '582 Patent, cls. 1, 3, 6, 14, 17, 18)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by the term “collimated beam,” as, for example, the specification admits that collimation cannot be

Claim Term	§ 112 Challenge Ground	Exemplary Description
		achieved for a non-point source of light and yet the claims recite a collimated beam. Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
first collimated beam ('443 Patent, cl.10)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by the term “collimate,” as, for example, the specification admits that collimation cannot be achieved for a non-point source of light and yet the claims recite collimation. A POSA would also not understand what constitutes a “first” collimated beam as opposed to a “second,” as recited by the claims. Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
second collimated beam ('443 Patent, cl.10)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by the term “collimate,” as, for example, the specification admits that collimation cannot be achieved for a non-point source of light and yet the claims recite collimation. A

Claim Term	§ 112 Challenge Ground	Exemplary Description
		POSA would also not understand what constitutes a “first” collimated beam as opposed to a “second,” as recited by the claims. Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
collimated distance (’582 Patent, cl. 14)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by the term “collimated distance,” as the specification contains no disclosure regarding the claim term or how to understand its scope. Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
wherein the collimated beam has a collimated distance (’582 Patent, cl. 14)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by this term, as, for example, the specification admits that collimation cannot be achieved for a non-point source of light and has no disclosure related to “collimated distance” let alone guidance on assessing its scope. Moreover, Beckman Coulter alleges in its

Claim Term	§ 112 Challenge Ground	Exemplary Description
		infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
extend the collimated distance of the collimated beam ('582 Patent, cl. 14)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what is meant by this term, as, for example, the specification admits that collimation cannot be achieved for a non-point source of light and has no disclosure related to “collimated distance” let alone guidance on assessing its scope. Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification.
a first focusing optical element arranged to receive the collimated beam from the optical relay element at the extended collimated distance ('582 Patent, cl. 17)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would not have been able to ascertain with reasonable certainty from the intrinsic record what it means to “receive ... at the extended collimated distance.” Moreover, Beckman Coulter alleges in its infringement contentions that certain aspects of the Accused Products fall within the scope of this claim term that are unsupported and not enabled by the specification. Issues related to “collimated beam,” “collimated distance,” and “extend[ed] collimated

Claim Term	§ 112 Challenge Ground	Exemplary Description
		distance” are incorporated here by reference.
curved mirror (’582 Patent, cls. 1, 14, 20; ’443 Patent, cls. 1, 18; ’106 Patent, cls. 1, 13, 18)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “curved mirror” means in view of the specification and in the context of the claims. While dependent claims and the specification identify “concave mirrors” used in the WDM, no further clarity is provided as to the scope of the “curved mirror” from the intrinsic record.
extended light source/extended light source that forms an object (’582 Patent, cl. 22)	Indefinite	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “extended light source”/“extended light source that forms an object” means in view of the specification and the context of the claims.
flow cell (’443 Patent, cls. 13, 18; ’106 Patent, cl. 1; ’107 Patent, cl. 16)	Lack of full scope enablement (and associated written description support)	The Asserted Claims lack utility, and are not enabled for, use of the claimed invention with any flow cell but require a specific flow cell configuration.
flow cytometer (’582 Patent, cls. 1, 14, 20; ’443 Patent, cls. 11, 15, 17, 18; ’106 Patent, cls. 1, 2, 10, 11, 13, 14; ’107 Patent, cls. 1, 3, 5, 7-12, 14, 17, 18, 26, 27, 29, 30)	Lack of full scope enablement (and associated written description support)	The Asserted Claims lack utility, and are not enabled for, use of the claimed invention with any flow cytometer but require a specific flow cytometer configuration.
optical element (’443 Patent, cls. 13, 17, 18)	Indefinite, lack of full scope enablement, lack of written description support.	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “optical element” means in view of the specification and the context of the claims. The specification does not enable, and lacks written description support for, any

Claim Term	§ 112 Challenge Ground	Exemplary Description
		“element” used in an optical system.
optical subsystem (’582 Patent, cls. 1, 14, 20)	Indefinite, lack of enablement, lack of written description support	The Asserted Claims recite for “an optical subsystem” components of a WDM, but the specification merely discloses for “optical subsystem” components that are distinct from the WDM.
wavelength division multiplexer (WDM) (e.g., ’443 Patent, cl. 1; ’106 Patent, cls. 1, 13; ’107 Patent, cls. 1, 16)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “wavelength division multiplexer (WDM)” means in view of the specification and the context of the claims. The specification does not enable, and lacks written description support for, any “wavelength division multiplexer (WDM).”
quantitate a first color band / quantitate the band of fluorescent light (’106 Patent, cls. 1, 13)	Indefinite	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “quantitate” means in view of the specification and the context of the claims.
portion of the collimated beam (’582 Patent, cls. 1, 3)	Indefinite, lack of full scope enablement, lack of written description support	Term of degree. A POSA would be unable to ascertain with reasonable certainty what the scope of the term “portion” means in view of the specification and the context of the claims. Issues related to “collimated beam” are incorporated here by reference.
portion(s) of the light (’443 Patent, cl. 1, 18; ’107 Patent cl. 1)	Indefinite	Term of degree. A POSA would be unable to ascertain with reasonable certainty what the scope of the term “portion” means in view of the specification and the context of the claims.

Claim Term	§ 112 Challenge Ground	Exemplary Description
portion of an optical path between the array of mirrors and the array of filters ('107 Patent, cl. 5)	Indefinite	Term of degree. A POSA would be unable to ascertain with reasonable certainty what the scope of the term “portion of an optical path” means in view of the specification and the context of the claims. Issues related to “array” are incorporated here by reference.
produce a first image ('582 Patent, cl. 1) / produce a second image ('582 Patent, cl. 14)	Indefinite, lack of full scope enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the claims mean for a mirror to “produce a first/second image,” particularly where other claim language refers to projection and thus treats these concepts differently. Moreover, the specification also does not enable, and lacks written description support for, an invention for any configuration that creates “first/second image.”
substantially the same ('582 Patent, cl. 15, 20, 21)	Indefinite	Term of degree, failing to provide a POSA with reasonable certainty as to what is “substantially the same” versus what is not.
substantially full spectrum of visible light ('107 Patent, cls. 9, 29)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “substantially full spectrum of visible light” means in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention that performs (substantially) full spectral analysis.

Claim Term	§ 112 Challenge Ground	Exemplary Description
substantially linear ('107 Patent, cl. 2)	Indefinite	Term of degree, failing to provide a POSA with reasonable certainty as to what is “substantially linear” versus what is not.
wherein the spot has a diameter that is smaller than a diameter of a core of the [multimode] optical fiber ('107 Patent, cls. 13, 17)	Indefinite	Subject to claim construction, a POSA would be unable to ascertain with reasonable certainty the claimed spot size based on an undimensioned and insufficiently defined “diameter of a core of the ... optical fiber.”
element / elements (<i>e.g.</i> , '443 Patent, cl. 4 (“set of elements, each element”); <i>see also</i> Asserted Claims <i>passim</i> and other terms reciting this term)	Indefinite, lack of enablement, lack of written description support	“Element” is a generic, nonce word for which there is insufficient definiteness and the specification does disclose to a POSA sufficient written description and enablement for any of the “element(s),” as recited in the asserted claims.
optical relay element (<i>e.g.</i> , '582 Patent, cls. 1, 14, 20)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “optical relay element” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any “optical relay element.”
(the optical relay element comprising a curved mirror) configured to reflect the portion of the collimated beam received from the collimating optical element to produce a first image (<i>e.g.</i> , '582 Patent, cl. 1); (the optical relay element) configured to extend the collimated distance of the collimated beam (<i>e.g.</i> , '582 Patent, cl. 14); (the optical	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of these terms in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any “optical relay element” for the recited

Claim Term	§ 112 Challenge Ground	Exemplary Description
relay element comprises a curved mirror or a concave-shaped dichroic filter) configured to produce a second image (<i>e.g.</i> , '582 Patent, cl. 14); (the optical relay element) configured to receive light from the collimating optical element and to project a second image" (<i>e.g.</i> , '582 Patent, cl. 20)		functions/configurations of these terms.
focusing optical element (<i>e.g.</i> , '582 Patent, cls. 1, 3)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term "focusing optical element" in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any "focusing optical element."
first focusing optical element (<i>e.g.</i> , '582 Patent, cls. 1, 3) second focusing optical element (<i>e.g.</i> , '582 Patent, cl. 18)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term "first/second focusing optical element" in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any "first/second focusing optical element."
image (<i>e.g.</i> , '582 Patent, cls. 1, 14, 15, 20, 22, 25)	Indefinite	A POSA would be unable to ascertain with reasonable certainty what the scope of the term "image" in view of the specification and the context of the claims.
the first image is a magnified image of the object (<i>e.g.</i> , '582 Patent, cl. 22)	Indefinite, lack of enablement, lack of written description support	Indefinite per "image" and "first image." Moreover, the specification also does not

Claim Term	§ 112 Challenge Ground	Exemplary Description
		enable, and lacks written description support for, an invention for any “first image is a magnified image of the object.”
concave mirror (<i>e.g.</i> , ’582 Patent, cl. 14; ’443 Patent, cl. 6) concave-shaped dichroic mirror (<i>e.g.</i> , ’582 Patent, cl. 14)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, an invention for with any “concave mirror” or “concave-shaped dichroic mirror.”
semiconductor detector (<i>e.g.</i> , ’582 Patent, cl. 1, <i>passim</i>)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “semiconductor detector” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any “semiconductor detector.”
first semiconductor detector (<i>e.g.</i> , ’582 Patent, cls. 1, 17) second semiconductor detector (<i>e.g.</i> , ’582 Patent, cl. 18)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “first/second” for the claimed “semiconductor detector” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any “first/second semiconductor detector.”
to a size smaller than 1 mm in diameter (<i>e.g.</i> , ’582 Patent, cl. 3) the diameter of the spot is less than 1 mm (<i>e.g.</i> , ’107 Patent, cls. 14, 18)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, an invention for with any configuration across the full scope of the claimed “to a size

Claim Term	§ 112 Challenge Ground	Exemplary Description
		smaller than 1 mm in diameter.”
optical filter (<i>e.g.</i> , ’582 Patent, cls. 6, 18) filter (<i>e.g.</i> , ’443 Patent, cl. 1, <i>passim</i>)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “optical filter” / “filter” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any “optical filter” / “filter.”
first optical filter (<i>e.g.</i> , ’582 Patent, cl. 6) first/second/third/fourth filter (<i>e.g.</i> , ’443 Patent, cl. 9)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the terms “first optical filter” or “first/second/third/fourth filter” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any “first optical filter” or any “first/second/third/fourth optical filter”
optical filter configured to separate the collimated beam into a first branch and a second branch...the optical relay element is arranged to receive the first branch (<i>e.g.</i> , ’582 Patent, cl. 18)	Indefinite	A POSA would be unable to ascertain with reasonable certainty what the scope of the terms “optical filter,” “optical relay element,” and “optical filter configured to separate the collimated beam into a first branch and a second branch...the optical relay element is arranged to receive the first branch” in view of the specification and the context of the claims.
the optical distance from the collimating optical element to the first image/the optical	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the

Claim Term	§ 112 Challenge Ground	Exemplary Description
distance from the optical relay element to the second image (<i>e.g.</i> , '582 Patent, cl. 21)		terms “the optical distance from the collimating optical element to the first image”/“the optical distance from the optical relay element to the second image” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention wherein “the optical distance from the collimating optical element to the first image is substantially the same as the optical distance from the optical relay element to the second image”
light source(s) / light from a light source (<i>e.g.</i> , '582 Patent, cls. 1, 2, 14, 20, 22; '443 Patent, cls. 18; '106 Patent, cls. 1, 13)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of the term “light source” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any invention using any “light source.”
arranged near/ arranged near the first/second image (<i>e.g.</i> , '582 Patent, cls. 20, 26)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “(arranged) near” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention wherein the optical relay element or the first focusing element is at any place “near” another element.

Claim Term	§ 112 Challenge Ground	Exemplary Description
a corresponding portion of multiple portions of light / one or more portions of the light (<i>e.g.</i> , '443 Patent, cl. 1)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty what the scope of the term “portion”/ “portion of multiple portions” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, an invention for any invention wherein a filter passes any “portion of multiple portions of light.”
reflect one or more portions of the light (<i>e.g.</i> , '443 Patent, cl. 1) / reflect the portion of the fluorescent light (<i>e.g.</i> , '106 Patent, cl. 1)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, an invention for any “mirror” or “curved mirror” that “reflect one or more portions of the light to the set of filters” or that reflect(s) the portion of the fluorescent light towards” a detector.
block / block configured to enable transmission of the light (<i>e.g.</i> , '443 patent, cl. 4; '107 Patent, cl. 10, 26)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of the term “block” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any invention with a “block.”
includes a bandpass filter, a lens, or a combination thereof (<i>e.g.</i> , '443 Patent, cl. 4)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, an invention that “includes a bandpass filter, a lens, or a combination thereof.”
a zig-zag pattern (<i>e.g.</i> , '443 Patent, cl. 7; '106 Patent, cl. 17; '107 Patent, cls. 1, 21)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of the term “a zig-zag pattern” in view of

Claim Term	§ 112 Challenge Ground	Exemplary Description
		the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any invention with a mirror that reflects in any “zig-zag pattern.”
an initial filter (<i>e.g.</i> , ’443 Patent, cl. 10)	Indefinite	A POSA would be unable to ascertain with reasonable certainty the scope of the term “an initial filter” in view of the specification and the context of the claims.
the second filter is configured to receive a first collimated beam of the light from the first mirror” / “the fourth filter is configured to receive a second collimated beam of the light from the third mirror (’443 Patent, cl. 10)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of these terms in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any invention wherein “the second filter is configured to receive a first collimated beam of the light from the first mirror” and “the fourth filter is configured to receive a second collimated beam of the light from the third mirror.”
optical fiber(s) (<i>e.g.</i> , ’443 Patent, cls. 3, 16, 18; ’106 Patent, cl. 2; ’107 Patent, cl. 1)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, an invention that includes any “optical fiber.”
the optical element is configured to output, based on the detected scattered light, the light to the WDM via the optical fiber (<i>e.g.</i> , ’443 Patent, cls. 3, 16) / light output by the optical element (<i>e.g.</i> , ’443 Patent, cl. 17) / configured to	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of this term/phrase in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written

Claim Term	§ 112 Challenge Ground	Exemplary Description
receive light from the optical element e.g., '443 Patent, cl. 18)		description support for, any invention with an “optical element” that is designed to “output, based on the detected scattered light, the light to the WDM via the optical fiber.”
a collecting optical element configured to collect and focus fluorescent light emitted by a particle illuminated by the light source such that the fluorescent light leaving the collecting optical element converges ('106 Patent, cl. 1, 13)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of these term “the fluorescent light leaving the collecting optical element converges” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any invention wherein a “collecting optical element” collects and focuses such that “the fluorescent light leaving the collecting optical element converges.”
(an array of) avalanche photodiodes (APDs) (e.g., '107 Patent, cl. 1) / (a plurality of) avalanche photodiodes (APDs) (e.g., '107 Patent, cl. 16)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention that includes any type of “avalanche photodiodes (APDs).”
an array of mirrors (e.g., '107 Patent, cl. 1) / at least one of the mirrors in the array of mirrors is a concave mirror (e.g., '107 Patent, cl. 3)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention that includes any type of “an array of mirrors.”
a portion of an optical path between the array of mirrors and the array of filters forms a zig-zag pattern (e.g., '107 Patent, cls. 5, 21)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of these term “a portion of an optical path between the array of mirrors and the array of filters forms a zig-zag pattern” in view of the specification and the context of the claims. Moreover, the specification

Claim Term	§ 112 Challenge Ground	Exemplary Description
		also does not enable, and lacks written description support for, any invention wherein “a portion of an optical path between the array of mirrors and the array of filters forms a zig-zag pattern.”
a laser that is configured to emit blue light, yellow-green light, violet light, or ultraviolet light (<i>e.g.</i> , '107 Patent, cls. 6, 22)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention as recited in this claim element.
a benchtop flow cytometer (<i>e.g.</i> , '107 Patent, cls. 7, 11, 27)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of “a benchtop flow cytometer” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any “benchtop flow cytometer.”
compact / the flow cytometer is compact (<i>e.g.</i> , '107 Patent, cls. 8, 12, 28)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of “the flow cytometer is compact” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any “flow cytometer [that] is compact.”
array of focusing lenses ('107 Patent, cl. 13) / plurality of focusing lenses ('107 Patent, cl. 17)	Indefinite	A POSA would be unable to ascertain with reasonable certainty the scope of an “array of focusing lenses” in view of the specification and the context of the claims.
focusing lenses . . . configured to focus light (<i>e.g.</i> , '107 Patent, cl. 13, 17)	Indefinite	A POSA would be unable to ascertain with reasonable certainty the scope of an “focusing lenses

Claim Term	§ 112 Challenge Ground	Exemplary Description
		configured to focus light” in view of the specification and the context of the claims.
a diameter that is smaller than a diameter of a core of the (multimode) optical fiber (<i>e.g.</i> , ’107 Patent, cl. 13, 17)	Indefinite, lack of enablement, lack of written description support	A POSA would be unable to ascertain with reasonable certainty the scope of “a diameter of a core of the optical fiber” in view of the specification and the context of the claims. Moreover, the specification also does not enable, and lacks written description support for, any WDM that has focusing lens array with “a [spot] diameter that is smaller than a diameter of a core of the optical fiber.”
multimode optical fiber (<i>e.g.</i> , ’107 Patent, cl. 16)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention using any “multimode optical fiber.”
a plurality of mirrors, wherein at least one of the mirrors is a concave mirror (<i>e.g.</i> , ’107 Patent, cl. 16) the plurality of mirrors includes more than one concave mirror (’107 Patent, cl. 20)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention wherein there is any “plurality of mirrors, wherein at least one of the mirrors is a concave mirror” or “more than one concave mirror.”
each of the plurality of mirrors is configured to receive light reflected by a filter of the plurality of filters/reflect light to another filter of the plurality of filters (’107 Patent, cl. 16)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention wherein any “plurality of mirrors” that may be configured to receive light and reflect light.
the plurality of mirrors comprise five or more mirrors/the plurality of filters comprise six or more filters (’107 Patent, cl. 30)	Lack of enablement, lack of written description support	The specification does not enable, and lacks written description support for, any invention wherein any “plurality of mirrors” or “plurality of filters is “five/six or more.”

Other Prior Art

In addition to the prior art references that Cytek has specifically discussed in these Invalidity Contentions, Cytek provides notice to Beckman Coulter of each reference produced in the accompanying document production of the same date. To the extent not specifically cited and relied upon as invalidating references with respect to the elements of the Asserted Claims, Cytek reserves the right to rely on these references at least as illustrating background knowledge in the field prior to the alleged inventions of the Asserted Claims and for other relevant purposes as may be disclosed pursuant to Cytek's continuing research and analysis of the Asserted Claims, accused instrumentalities, and the prior art.

Document Production Accompanying Invalidity Contentions

- A. Source code, specifications, schematics, flow charts, artwork, formulas, or other documentation sufficient to show the operation of any aspects or elements of an Accused Instrumentality identified by the patent claimant in its chart produced pursuant to paragraph 3(c) of the Scheduling Order:**

Cytek has produced these documents at CYTEK_0000000001-CYTEK_0000011148 and in subsequent productions related to the parties' discussions regarding technical documentation. Discovery is ongoing and Cytek reserves the right to supplement this disclosure.

- B. A copy or sample of the prior art identified pursuant to the Scheduling Order paragraph 5(a) that does not appear in the file history of the patent(s) at issue. To the extent any such item is not in English, an English translation of the portion(s) relied upon shall be produced:**

Cytek has produced these documents with the production numbers as referenced in Appendix A.

- C. All agreements that the party opposing infringement contends are comparable to a license that would result from a hypothetical reasonable royalty negotiation:**

Cytek has produced these documents at: CYTEK_0000020561 - CYTEK_0000020654; CYTEK_0000020655 - CYTEK_0000020669.

D. Documents sufficient to show the sales, revenue, cost, and profits for Accused Instrumentalities identified pursuant to paragraph 3(b) of the Scheduling Order for any period of alleged infringement:

Cytek has produced these documents at: CYTEK_0000020670.

E. All agreements that may be used to support the damages case of the party opposing infringement:

Cytek is not aware of any other agreements at this time.

Dated: July 11, 2025

Respectfully submitted,

By: /s/ Adam Pivovar

Karen Jacobs (#2881)
Jeremy A. Tigan (#5239)
MORRIS, NICHOLS, ARSHT & TUNNELL
LLP
1201 North Market Street
P.O. Box 1347
Wilmington, DE 19899
(302) 658-9200
kjacobs@morrisnichols.com

Reuben H. Chen (*pro hac vice*)
COOLEY LLP
3175 Hanover Street
Palo Alto, CA 94304
(650) 843-5000
rchen@cooley.com

Elizabeth M. Flanagan (#5891)
COOLEY LLP
30 S. 9th Street, 7th Floor
Minneapolis, MN 55402
bflanagan@cooley.com

Adam Pivovar (*pro hac vice*)
Dustin M. Knight (*pro hac vice*)
Rosalynd D. Upton (*pro hac vice*)
COOLEY LLP
1299 Pennsylvania Avenue NW,
Suite 700
Washington, DC 20004
(202) 842-7800
apivovar@cooley.com
dknight@cooley.com
rupton@cooley.com

*Attorneys for Defendant Cytex Biosciences,
Inc.*

APPENDIX A

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
APD Modules, Hamamatsu (1)	2005-10-14_Application Notes_APD Modules, Hamamatsu	October 14, 2005	CYTEK_0000014413-CYTEK_0000014413
APD Modules, Hamamatsu (2)	2005-10-22_C5460_APD Modules, Hamamatsu	October 22, 2005	CYTEK_0000014414-CYTEK_0000014414
APD Modules, Hamamatsu (3)	2005-10-22_C5460-01_APD Modules, Hamamatsu	October 22, 2005	CYTEK_0000014417-CYTEK_0000014417
APD Modules, Hamamatsu (4)	2005-12-03_APD Modules, Hamamatsu	December 3, 2005	CYTEK_0000014495-CYTEK_0000014495
APD Modules, Hamamatsu (5)	2005-12-19_APD Modules, Hamamatsu	December 19, 2005	CYTEK_0000014498-CYTEK_0000014498
APD Module Drawing, Hamamatsu	2005-10-22_C5460_Drawing_APD Modules, Hamamatsu	October 22, 2005	CYTEK_0000014415-CYTEK_0000014415
APD Module Spectral Response, Hamamatsu	2005-10-22_C5460_Spectral Response_APD Modules, Hamamatsu	October 22, 2005	CYTEK_0000014416-CYTEK_0000014416
Application Product and Module of Opto-Semiconductor (1)	2005-10-25_Catalog_Application_product_and_module_optosemi	October 25, 2005	CYTEK_0000014418-CYTEK_0000014434
Application Product and Module of Opto-Semiconductor (2)	2011-08-05_Application_product_and_module_optosemi	August 5, 2011	CYTEK_0000014503-CYTEK_0000014519
Ariyoshi-847	US20110054847A1	August 25, 2009	CYTEK_0000016373-CYTEK_0000016397
BD FACSAarray	See Exs. A-21 at 1, B-21 at 1, C-21 at 1, D-21 at 1	See Ex. A-21 at 1, B-21 at 1, C-21 at 1, D-21 at 1	CYTEK_0000011627-CYTEK_0000011714
BD LSRFortessa	See Exs. A-16 at 1, B-16 at 1, C-16 at 1, D-16 at 1	See Exs. A-16 at 1, B-16 at 1,	CYTEK_0000011715-CYTEK_0000011990

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
		C-16 at 1, D-16 at 1	
BD LSRII	See Exs. A-15 at 1, B-15 at 1, C-15 at 1, D-15 at 1	See Exs. A-15 at 1, B-15 at 1, C-15 at 1, D-15 at 1	CYTEK_0000011991- CYTEK_0000012168
Brennan 2009	Desmond Brennan et al., <i>Emerging optofluidic technologies for point-of-care genetic analysis systems: a review</i> , Anal Bioanal Chem (2009) 395:621–636	2009	CYTEK_0000015438- CYTEK_0000015453
Capewell-074	U.S. Patent No. 7,024,074	September 30, 2002	CYTEK_0000017932- CYTEK_0000017942
Chandler-800	U.S. Patent No. 6,139,800	June 23, 1997	CYTEK_0000015066- CYTEK_0000015084
Chapman 2000	Graeme V. Chapman et al., <i>Instrumentation for Flow Cytometry</i> , Journal of Immunological Methods, 243, 3–12 (2000)	2000	CYTEK_0000015233 - CYTEK_0000015242
Characteristics and Use of SI APD	2005-10-25_Characteristics_and_use_of_SI_APD	October 25, 2005	CYTEK_0000014435- CYTEK_0000014446
Choosing Your Detector	choosing-detector	March 2005	CYTEK_0000014379- CYTEK_0000014381
Cytex's Curved Mirror DxP Wavelength Division (de)Multiplexer Detectors	See Exs. A-22 at 1, B-22 at 1, C-22 at 1, D-22 at 1	See Exs. A-22 at 1, B-22 at 1, C-22 at 1, D-22 at 1	See Exs. A-22, B-22, C-22, D-22
D'Antoni 2006	Christina M. D'Antoni et al., <i>Rapid quantitative analysis using a single molecule counting approach</i> , Analytical	2006	CYTEK_0000014690- CYTEK_0000014702

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
	Biochemistry 352, 97–109 (2006)		
Deng-355	U.S. Patent No. 9,250,355	April 6, 2011	CYTEK_0000018000- CYTEK_0000018014
Doornbos-1993	R.M.P. Doornbos et al., <i>White Blood Cell Differentiation Using a Solid State Flow Cytometer</i> , Cytometry, 14:589-594 (1993)	1993	CYTEK_0000014278- CYTEK_0000014283
Farrell-339	U.S. Patent No. 7,268,339	September 27, 2005	CYTEK_0000015314- CYTEK_0000015342
Finisar Announces Photodiodes	Finisar Announces Photodiodes	December 3, 2001	CYTEK_0000014382
First Sensor APDs	2012-02-13_Avalanche photodiodes (APD) _ First Sensor	February 13, 2012	CYTEK_0000014392- CYTEK_0000014396
First Sensor APD Data Sheet Order #500970	AD800-11_TO_500970_PSS_06-112 (Datasheet from June 20, 2011)	June 20, 2011	CYTEK_0000014411- CYTEK_0000014412
First Sensor APD Data Sheet Order #501117	AD1100-8_TO_501117_PSS_06-025 (Datasheet, June 2011)	June 2011	CYTEK_0000014399- CYTEK_0000014400
First Sensor APD Data Sheet Order #500015	AD1900-8_TO_500015 (Datasheet, Sept. 2010)	September 2010	CYTEK_0000014403- CYTEK_0000014405
First Sensor APD Data Sheet Order #500967	AD1900-11_TO_500967_PSS_06-113 (Datasheet June 2011)	June 2011	CYTEK_0000014401- CYTEK_0000014402
First Sensor APD Data Sheet Order #501194	AD3000-8_TO_501194_500158 (Datasheet, June 2011)	June 2011	CYTEK_0000014406- CYTEK_0000014408
First Sensor APD Data Sheet Order #500160	AD5000-8_TO_500160 (datasheet, July 2011)	July 2011	CYTEK_0000014409- CYTEK_0000014410
First Sensor Components	2012-05-19_Components _ First Sensor	May 19, 2012	CYTEK_0000014398- CYTEK_0000014398
First Sensor Detectors	2012-04-14_Detectors _ First Sensor	April 14, 2012	CYTEK_0000014397- CYTEK_0000014397

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
First Sensor Home Page	2011-12-17_First Sensor (Home Page)	December 17, 2011	CYTEK_0000014391- CYTEK_0000014391
Frazier-402	U.S. Patent No. 8,284,402	February 27, 2009	CYTEK_0000012186- CYTEK_0000012204
Gjelsnes-695	WO 1994/029695	June 8, 1993	CYTEK_0000012205- CYTEK_0000012221
Grafton 2008 (1)	M.G. Grafton et al., <i>Design of a Multi-Stage Microfluidics System for High-Speed Flow Cytometry and Closed System Cell Sorting for Cytomics</i> , Proc. of SPIE Vol. 6859 68590V-1-12	2008	CYTEK_0000015471- CYTEK_0000015482 CYTEK_0000015483- CYTEK_0000015495
Grafton 2008 (2)	M.G. Grafton et al., <i>Design of a Multi-Stage Microfluidics System for High-Speed Flow Cytometry and Closed System Cell Sorting for Cytonics</i> , Proc. of SPIE Vol. 6859 68590V-1-12	2008	CYTEK_0000015471- CYTEK_0000015482 CYTEK_0000015483- CYTEK_0000015495
Grafton 2009	M.G. Grafton et al., <i>Microfabrication of a two-stage BioMEMS microfluidic cell sorter</i> , Proc. of SPIE Vol. 7207 72070A-1-9	2009	CYTEK_0000015496- CYTEK_0000015505
Grafton 2010	M.G. Grafton et al., <i>Portable Microfluidic Cytometer for Whole Blood Cell Analysis</i> , Proc. of SPIE Vol. 7593 75930M-1-8	2010	CYTEK_0000015506- CYTEK_0000015514
Grafton 2011	M.G. Grafton et al., <i>Microfluidic MEMS Hand-Held Flow Cytometer</i> , Proc. of SPIE Vol. 7929 79290C-1-10	2011	CYTEK_0000015515- CYTEK_0000015525
Grann-908	U.S. Patent No. 6,201,908	March 13, 2001	CYTEK_0000012222- CYTEK_0000012233
Grann-976	U.S. Patent No. 6,563,976	May 13, 2003	CYTEK_0000012234- CYTEK_0000012261

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Grégori 2011	Hyperspectral Cytometry at the Single-Cell Level Using a 32-Channel Photodetector	August 30, 2011	CYTEK_0000016131- CYTEK_0000016140
Hairston-844	U.S. Patent No. 7,576,844	February 8, 2005	CYTEK_0000015085- CYTEK_0000015104
Hamada-120	U.S. Patent No. 7,580,120	April 7, 2005	CYTEK_0000015105- CYTEK_0000015123
Hamamatsu CERN Award	CERN_award_mayer	February 2003	CYTEK_0000014520- CYTEK_0000014521
Hamamatsu APD Catalogs Characteristics and Use of Si APD (1)	2003-09-01_Hamamatsu APD Catalog_Characteristics_and_use_of_Si_APD	September 1, 2003	CYTEK_0000014319- CYTEK_0000014330
Hamamatsu APD Catalogs Characteristics and Use of Si APD (2)	2006-10-31_Hamamatsu APD Catalog_Characteristics_and_use_of_SI_APD	October 31, 2006	CYTEK_0000014335- CYTEK_0000014346
Hamamatsu APD Catalogs Characteristics and Use of Si APD (3)	Hamamatsu 2003 APD Catalog - IA Webpage	2003	CYTEK_0000020887- CYTEK_0000020891
Hamamatsu APD Catalogs Characteristics and Use of Si APD (4)	Hamamatsu 2010 APD Catalog	2010	CYTEK_0000020860- CYTEK_0000020886
Hamamatsu APDs for Flow Cytometry	2013-03-13_Hamamatsu APDs_For flow cytometry_Medical _Hamamatsu Photonics	March 13, 2013	CYTEK_0000014374- CYTEK_0000014375
Hamamatsu APD Modules (1)	2003-10-27_Hamamatsu APD Modules_Comonents_ APD Modules	October 27, 2003	CYTEK_0000014332- CYTEK_0000014332
Hamamatsu APD Modules (2)	2003-12-22_Hamamatsu APDs	December 22, 2003	CYTEK_0000014333- CYTEK_0000014334
Hamamatsu APD Modules (3)	2012-08-27_APD Modules, Hamamatsu	August 27, 2012	CYTEK_0000014370- CYTEK_0000014370

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Hamamatsu APD Module C5460 Series	2003-07-02_Hamamatsu_C5460-01	July 2, 2003	CYTEK_0000014315-CYTEK_0000014318
Hamamatsu Avalanche Photodiodes (APDs)	2003-10-12_Hamamatsu APDs_web.archive.org_web_20031012065143_http...tsu.com_cm p-detectors_apds_default	October 12, 2003	CYTEK_0000014331-CYTEK_0000014331
Hamamatsu Biotechnology Applications	2012-10-09_Biotechnology Applications	October 9, 2012	CYTEK_0000014373-CYTEK_0000014373
Hamamatsu Photodiode Technical Information	2005-11-01_photodiode_technical_information	November 1, 2005	CYTEK_0000014477-CYTEK_0000014494
Hamamatsu Photonics	2007-05-05_SiAPD_Hamamatsu Photonics - Europe and America	May 5, 2007	CYTEK_0000014355-CYTEK_0000014355
Hamamatsu Power Supply for APD	2007-10-28_m6017_kacc1064e01 (Power Supply for APD)	October 28, 2007	CYTEK_0000014501-CYTEK_0000014501
Hamamatsu Press Release (1)	2007-06-23_Hamamatsu Press Release Advanced APD for Photon Counting	June 23, 2007	CYTEK_0000014499-CYTEK_0000014499
Hamamatsu Press Release (2)	2007-06-24_Hamamatsu Press Release New Mini-Spectrometers...Low-Light Measurements	June 24, 2007	CYTEK_0000014500-CYTEK_0000014500
Hamamatsu Products by Division	2011-08-07_Products by Division, Hamamatsu	July 8, 2011	CYTEK_0000014369-CYTEK_0000014369
Hamamatsu Si APD (1)	2006-10-31_Hamamatsu_S5343_Si APD	October 31, 2006	CYTEK_0000014347-CYTEK_0000014350
Hamamatsu Si APD (2)	2007-12-04_Si APDs, Hamamatsu	December 4, 2007	CYTEK_0000014356-CYTEK_0000014357
Hamamatsu Si APD (3)	2011-06-26_Hamamatsu_Datasheet_s8890_series_kapd1010e03	June 26, 2011	CYTEK_0000014358-CYTEK_0000014360

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Hamamatsu Si APD (4)	2011-06-26_Hamamatsu_S5343_etc	June 26, 2011	CYTEK_0000014361-CYTEK_0000014364
Hamamatsu Si APD (5)	2011-06-26_s2381_etc_kapd1007e09	June 26, 2011	CYTEK_0000014365-CYTEK_0000014368
Hamamatsu Si APD (6)	2012-08-31_Si APDs, Hamamatsu	August 31, 2012	CYTEK_0000014371-CYTEK_0000014372
Hamamatsu Si APD (7)	NPL9-Hamamatsu-S5139-DataSheet-2005	2005	CYTEK_0000015590-CYTEK_0000015593
Hamamatsu Si APD Long Wavelength Type APD	Sept 2012 Datasheet_Hamamatsu_s8890_series_kapd1010e	September 2012	CYTEK_0000014387-CYTEK_0000014390
Hamamatsu Si APD Photonics	2017-08-05_Si APD _Hamamatsu Photonics	August 5, 2017	CYTEK_0000014376-CYTEK_0000014378
Hansen-412	U.S. Patent No. 4,284,412	August 18, 1981	CYTEK_0000012282-CYTEK_0000012292
He-343	U.S. Patent No. 7,212,343	May 1, 2007	CYTEK_0000012293-CYTEK_0000012305
Heffelfinger-967	U.S. Patent Appl. Pub. No. 2003/0044967	March 6, 2003	CYTEK_0000012306-CYTEK_0000012321
Hsieh-480	U.S. Patent Appl. Pub. No.	December 15, 2000	CYTEK_0000019090-CYTEK_0000019099
Ilkov-283	U.S. Patent No. 8,605,283	May 5, 2011	CYTEK_0000017342-CYTEK_0000017357
Jalali-776	US20110168776A1	July 23, 2009	CYTEK_0000016534-CYTEK_0000016563
Jayaraman-517	U.S. Patent No. 5,835,517	November 10, 1998	CYTEK_0000012340-CYTEK_0000012349
Kaduchak-426	US20110134426A1	December 4, 2009	CYTEK_0000016418-CYTEK_0000016475
Kardos-686	U.S. Patent No. 6,159,686	November 3, 1997	CYTEK_0000017784-CYTEK_0000017847
Kasdan-087	US20130102087A1	April 15, 2010	CYTEK_0000016659-CYTEK_0000016686
Kiesel-800	U.S. Patent No. 9,029,800	August 9, 2011	CYTEK_0000015143-CYTEK_0000015179
Kiyoshi Nosu-045	U.S. Patent No. 4,244,045	January 6, 1981	CYTEK_0000016695-CYTEK_0000016711

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Lawrence-2006	William G. Lawrence et al., <i>A 16-channel avalanche photodiode detector array for visible and near-infrared flow cytometry</i> , Proc. of SPIE Vol. 6088, 60880T1-60880T10 (2006)	2006	CYTEK_0000014257- CYTEK_0000014266
Lawrence-2006 (2)	William G. Lawrence et al., <i>A 16-Channel APD Array for Visible and Near-IR Flow Cytometry</i> , ISAC XXIII International Congress May 20-24, 2006	May 2006	CYTEK_0000015273- CYTEK_0000015273
Lawrence-1-2008	William G. Lawrence et al., <i>A Comparison of Avalanche Photodiode and Photomultiplier Tube Detectors for Flow Cytometry</i> , Proc. of SPIE Vol. 6859, 68590M1-68590M11 (2008)	2008	CYTEK_0000014267- CYTEK_0000014277
Lawrence-2-2008	William G. Lawrence et al., <i>Enhanced Red and Near Infrared Detection in Flow Cytometry Using Avalanche Photodiodes</i> , Cytometry Part A 73A: 767-776 (2008)	2008	CYTEK_0000014292- CYTEK_0000014301
Leif-611	U.S. Patent No. 4,351,611	September 22, 1980	CYTEK_0000016723- CYTEK_0000016727
Lemoff-864	U.S. Patent No. 6,198,864	November 24, 1998	CYTEK_0000017084- CYTEK_0000017092
Li-244	U.S. Patent No. 8,488,244	July 12, 2010	CYTEK_0000012380- CYTEK_0000012393
Li-328	US20110089328A1	October 20, 2009	CYTEK_0000016398- CYTEK_0000016417
Li-438	U.S. Patent No. 8,188,438	October 20, 2009	CYTEK_0000012359- CYTEK_0000012379
Light Levels and Noise	lightlevelnoise	July 2000	CYTEK_0000014522- CYTEK_0000014525

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Light Levels and Noise	2006-10-31_lightlevelnoise	October 31, 2006	CYTEK_0000014351-CYTEK_0000014354
Lloyd-401	WO2004001401A2	June 21, 2002	CYTEK_0000017442-CYTEK_0000017494
Luminex	See Exs. A-18 at 1-2, B-18 at 1-2, C-18 at 1-2, D-18 at 1-2	See Exs. A-18 at 1-2, B-18 at 1-2, C-18 at 1-2, D-18 at 1-2	CYTEK_0000012577-CYTEK_0000014256
Maleki 2012	Teimour Maleki et al., <i>Point-of-care, portable microfluidic blood analyzer system</i> , Proc. of SPIE Vol. 8251 82510C-1-82510C-13 (2012)	2012	CYTEK_0000014556-CYTEK_0000014568
Mandella-928	U.S. Patent No. 6,369,928	November 1, 2000	CYTEK_0000017860-CYTEK_0000017890
Masahiko 2001	Masahiko et al, <i>Flow Cytometer Using a Fiber Optic Detection System</i>	May 2001	CYTEK_0000017580 - CYTEK_0000017580
Matsumoto-210	US20110053210A1	April 28, 2009	CYTEK_0000016341-CYTEK_0000016372
McClish 2005	Mickel McClish et al., <i>A Reexamination of Silicon Avalanche Photodiode Gain and Quantum Efficiency</i> , IEEE Nuclear Science Symposium Conference Record (2005)	2005	CYTEK_0000015274-CYTEK_0000015277
Menlo Systems, APD210 High Sensitivity Detector Unit	2009-10-16_Optical Detectors - APD210 High Sensitivity Detector Unit - Menlo Systems	October 16, 2009	CYTEK_0000014569-CYTEK_0000014570
Menlo Systems, APD210_TL High Sensitivity Detector Unit	APD210-AutoCADPDF	May 8, 2020	CYTEK_0000014583-CYTEK_0000014583
Menlo Systems, APD-Series High	APD210-Manual	2021	CYTEK_0000014584-CYTEK_0000014584

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Sensitivity Avalanche Photodetector User Manual			
Menlo Systems, APD210/310 High Sensitivity Detector Unit Spec Sheet	APD210-SpecSheet	2021	CYTEK_0000014605-CYTEK_0000014606
Menlo Systems, APD210/310/410 High Sensitivity Detector Unit Spec Sheet	Menlo Systems APD210 Spec Sheet_EN_2024-05-06_3w	May 6, 2024	CYTEK_0000014607-CYTEK_0000014608
Menlo Systems, APD210 Drawings	MENLO-APD210-td-2013-03-3w	March 29, 2007	CYTEK_0000014609-CYTEK_0000014609
Menlo Systems, Optical Detectors	2011-08-23 Optical Detectors - Menlo Systems	August 23, 2011	CYTEK_0000014571-CYTEK_0000014572
Nakayama-828	U.S. Patent No. 7,221,828	June 11, 2003	CYTEK_0000017956-CYTEK_0000017970
Neely 2006	Lori A. Neely et al., A Single-Molecule Method for the Quantitation of microRNA Gene Expression, Nature Methods, Vol. 3 No. 1, (Jan. 2006)	January 2006	CYTEK_0000015584-CYTEK_0000015589
Newport Photodetector	2011-02-07_Newport_Photodetector_818-SL	February 7, 2011	CYTEK_0000014526-CYTEK_0000014527
Oostman-539	U.S. Patent Pub. Appl. No. 2003/0048539	March 13, 2003	CYTEK_0000012394-CYTEK_0000012413
Optosemiconductors Condensed Catalog	2005-11-01_Optosemiconductors_Condensed Catalog	November 11, 2005	CYTEK_0000014447-CYTEK_0000014476
Ortyn-357	U.S. Patent No. 7,315,357	January 25, 1999	CYTEK_0000012452-CYTEK_0000012493
Panotopoulos-602	U.S. Patent No. 7,349,602	March 25, 2008	CYTEK_0000017971-CYTEK_0000017979
Panotopoulos-677	U.S. Patent Appl. Pub. No. 2016/0195677	April 13, 2006	CYTEK_0000012494-CYTEK_0000012512

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Partec - Flow Cytometry for Cytomics and Cell Analysis	2006-07-14_Partec - Flow Cytometry for Cytomics and Cell Analysis	July 14, 2006	CYTEK_0000015243- CYTEK_0000015243
Patt-324	CA2771324A1	August 20, 2009	CYTEK_0000012513- CYTEK_0000012536
Prasad 2003	INTRO TO BIOPHOTONICS	2003	CYTEK_0000015670- CYTEK_0000015715
Renker 2006	D. Renker, Geiger-Mode Avalanche Photodiodes, History, Properties and Problems, Nuclear Instruments and Methods in Physics Research A 567 (2006 48-56	2006	CYTEK_0000015428- CYTEK_0000015437
Renker 2009	D. Renker et al., <i>Advances in solid state photon detectors</i> , Journal of Instrumentation 2009	2009	CYTEK_0000015371- CYTEK_0000015427
RMD APDs for Flow Cytometry	2006-10-29_RMD Sciences_APDs for Flow Cytometry	October 29, 2006	CYTEK_0000015246- CYTEK_0000015246
RMD APDs for Flow Cytometry (2)	2009-03-01_RMD - Radiation Monitoring Devices, Inc	March 1, 2009	CYTEK_0000015247- CYTEK_0000015252
RDM Avalanche Photodiodes With Wide Spectral Response	RMD-Avalanche Photodiodes With Wide Spectral Response - RMD, Dynasil_ - www.rmdinc.com	2024	CYTEK_0000015606- CYTEK_0000015608
RMD Biosensor Technology	2009-03-10_RMD_Biosensor Technology	March 10, 2009	CYTEK_0000015253- CYTEK_0000015255
RMD High-Gain APD	2001-01-21_RMD Sciences_High-Gain APD	January 21, 2001	CYTEK_0000015244- CYTEK_0000015245
Rose-062	U.S. Patent No. 6,978,062	February 21, 2001	CYTEK_0000017891- CYTEK_0000017931
SensL Documentation	2011-10-07_Documentation _ SensL	October 7, 2011	CYTEK_0000014546- CYTEK_0000014546
SensL Low Light Detection	2011-03-03_SensL_Low light detection	March 3, 2011	CYTEK_0000014544- CYTEK_0000014545
SensL MicroSL	2011-10-08_SensL_MicroSL _ SensL	October 8, 2011	CYTEK_0000014548- CYTEK_0000014548

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
SensL MiniSL	2011-10-08_MiniSL _ SensL	October 8, 2011	CYTEK_0000014547- CYTEK_0000014547
SensL PCDMini Datasheet	2013-07-18_DS-pcdmini_datasheet (Jan. 2012)	July 18, 2013	CYTEK_0000014552- CYTEK_0000014555
SensL Shopping Cart Page	2011-11-11_Shopping Cart Page_MiniSL _ SensL	November 11, 2012	CYTEK_0000014550- CYTEK_0000014551
SensL Silicon Photomultipliers	2011-10-08_SensL_Silicon Photomultipliers _ SensL	October 8, 2011	CYTEK_0000014549- CYTEK_0000014549
SensL Solid State Photomultipliers	2007-11-19_SensL (Solid State Photomultipliers)	November 19, 2007	CYTEK_0000014542- CYTEK_0000014543
SensL SPMMini Datasheet	2007-11-17_SPMMini_Datasheet	November 17, 2007	CYTEK_0000014534- CYTEK_0000014541
SensL Silicon Photomultipliers - High Gain APDs	2007-11-17_SensL (Silicon Photomultipliers - High Gain APDs)	November 17, 2007	CYTEK_0000014528- CYTEK_0000014530
SensL SPMMini	2007-11-17_SensL (SPMMini)	November 17, 2007	CYTEK_0000014531- CYTEK_0000014533
Shoor-261	EP0121261A2	April 5, 1983	CYTEK_0000016141- CYTEK_0000016196
Si APDs, Hamamatsu (1)	2005-12-15_Si APDs, Hamamatsu	December 15, 2005	CYTEK_0000014496- CYTEK_0000014496
Si APDs, Hamamatsu (2)	2005-12-17_Si APDs, Hamamatsu	December 17, 2005	CYTEK_0000014497- CYTEK_0000014497
Snow 2003	C.K. Snow, <i>Flow Cytometer Electronics</i> , Cytometry Part A 57A:63 - 69 (2004)	2004	CYTEK_0000014703- CYTEK_0000014709
Sorin-390	U.S. Patent No. 9,417,390	August 31, 2011	CYTEK_0000018015- CYTEK_0000018030
Stapels 2008	Christopher J. Stapels et al., <i>CMOS Geiger photodiode array with integrated signal processing for imaging of 2D objects using quantum dots</i> , Proc. of SPIE Vol. 7055 70550S-1-70550S-9 (2008)	2008	CYTEK_0000015256- CYTEK_0000015264
Stapels 2009	C.J. Stapels et al., <i>Solid State photomultipliers and Geiger photodiodes with integrated readout and signal processing</i> ,	2009	CYTEK_0000015308- CYTEK_0000015313

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
	Proc. of SPIE Vol. 7220 72200H-1-72200H-5 (2009)		
Stewart-2005	Carleton C. Stewart et al., <i>Flow Cytometer in the Infrared: Inexpensive Modifications to a Commercial Instrument</i> , Cytometry Part A 67A:104–111 (2005)	2005	CYTEK_0000014284- CYTEK_0000014291
Stoffel 2005	Carrie L. Stoffel et al., <i>Design and Characterization of a Compact Dual Channel Virus Counter</i> , Cytometry Part A 65A:140–47 (2005)	2005	CYTEK_0000012537- CYTEK_0000012544
Sysmex XS-1000i	Sysmex XS-1000i Pictures	Pre-2012	CYTEK_0000020835- CYTEK_0000020859
Thomas-623	WO 2010/101623 A1	March 2, 2009	CYTEK_0000012545- CYTEK_0000012576
Thor Labs, Amplified Detectors	2012-07-30_Thorlabs	July 30, 2012	CYTEK_0000014579- CYTEK_0000014579
Thor Labs, APD210	2013-02-04_Thorlabs - APD210, 400-1000nm	February 4, 2013	CYTEK_0000014580- CYTEK_0000014580
Thor Labs, High Sensitivity APDs (1)	2011-08-31_High-Sensitivity Avalanche Photodetectors_Thorlabs	August 31, 2011	CYTEK_0000014577- CYTEK_0000014577
Thor Labs, High Sensitivity APDs (2)	2011-12-09 (Avalanche Detectors) Thorlabs	December 9, 2011	CYTEK_0000014578- CYTEK_0000014578
Thor Labs, High Sensitivity APDs (Documents and Drawings)	2011-08-31_High-Sensitivity Avalanche Photodetectors (Docs and Drawings) Thorlabs	August 31, 2011	CYTEK_0000014573- CYTEK_0000014574
Thor Labs, High Sensitivity APDs (Specs)	2011-08-31_High-Sensitivity Avalanche Photodetectors (Specs)_Thorlabs	August 31, 2011	CYTEK_0000014575- CYTEK_0000014576
Thor Labs, Photodetectors Si Avalanche	2014-11-19_low light_ fluorescence_Fotodetectores Si Avalanche ThorLabs APD120A	November 18, 2014	CYTEK_0000014581- CYTEK_0000014582

Short Name	Prior Art Reference(s)	Priority Date(s)	BATES Range
Tsuneta-598	US20100045982A1	November 28, 2006	CYTEK_0000016282- CYTEK_0000016328
Whitman-602	US20110223602A1	December 13, 2006	CYTEK_0000016587- CYTEK_0000016641
Wu 2008	Wu et al., <i>Simultaneous particle counting and detecting on a chip</i>	September 10, 2008	CYTEK_0000014610- CYTEK_0000014616
Yebras 2012	J.M. Yebras et al., <i>Single Photon Counting with Silicon Photomultipliers, shortening systems and incoherent illumination</i> , J. Europ. Opt. Soc. Rap. Public. 7 , 12014 (2012)	2012	CYTEK_0000015353- CYTEK_0000015360
Yount-804	6,809,804	May 11, 2001	CYTEK_0000020797- CYTEK_0000020834
Zarling-397	U.S. Patent No. 5,698,397	September 14, 1993	CYTEK_0000015005- CYTEK_0000015065
Zhao-2011	Shutao Zhao et al., <i>High gain avalanche photodiode (APD) arrays in flow cytometer optical [sic] system</i> ,	2011	CYTEK_0000014312- CYTEK_0000014314

APPENDIX B

A. '443 Patent

Exhibit No.	Prior Art Reference
A-1	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 7,315,357 (Ortyn-357)
A-2	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 8,284,402 (Frazier-402)
A-3	U.S. Patent No. 11,703,443 vs. WO 2010/101623 A1 (Thomas-623)
A-4	U.S. Patent No. 11,703,443 vs. WO 1994/029695 (Gjelsnes-695)
A-5	U.S. Patent No. 11,703,443 vs. <i>Design and Characterization of a Compact Dual Channel Virus Counter</i> , Cytometry Part A 65A:140–47 (2005) (Stoffel 2005)
A-6	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 6,201,908 (Grann-908)
A-7	U.S. Patent No. 11,703,443 vs. U.S. Patent Appl. Pub. No. 2003/0044967 (Heffelfinger-967)
A-8	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 6,563,976 (Grann-976)
A-9	U.S. Patent No. 11,703,443 vs. U.S. Patent Pub. Appl. No. 2003/0048539 (Oostman-539)
A-10	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 8,188,438 (Li-438)
A-11	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 8,488,244 (Li-244)
A-12	U.S. Patent No. 11,703,443 vs. U.S. Patent Appl. Pub. No. 2016/0195677 (Panotopoulos-677)
A-13	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 5,835,517 (Jayaraman-517)
A-14	U.S. Patent No. 11,703,443 vs. CA2771324A1 (Patt-324)
A-15	U.S. Patent No. 11,703,443 vs. BD LSR II System (BD LSR II or BD LSR II System)
A-16	U.S. Patent No. 11,703,443 vs. BD LSRFortessa System (BD LSRFortessa or BD LSRFortessa System)
A-17	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 6,198,864 (Lemoff-864)
A-18	U.S. Patent No. 11,703,443 vs. Luminex
A-19	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 7,212,343 (He-343)
A-20	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 4,284,412 (Hansen-412)
A-21	U.S. Patent No. 11,703,443 vs. BD FACSAArray
A-22	U.S. Patent No. 11,703,443 vs. Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors
A-23	U.S. Patent No. 11,703,443 vs. <i>Flow Cytometer in the Infrared: Inexpensive Modifications to a Commercial Instrument</i> , International Society for Analytical Cytology, Part A 67A:104-111 (Stewart-2005)
A-24	U.S. Patent No. 11,703,443 vs. U.S. Patent No. 8,605,283 (Ilkov-283)

B. '582 Patent

Exhibit No.	Prior Art Reference
B-1	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 8,284,402 (Frazier-402)
B-2	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 8,284,402 (Thomas-623)
B-3	U.S. Patent No. 10,330,582 vs. WO 1994/029695 (Gjelsnes-695)
B-4	U.S. Patent No. 10,330,582 vs. <i>Design and Characterization of a Compact Dual Channel Virus Counter</i> , Cytometry Part A 65A:140–47 (2005) (Stoffel 2005)
B-5	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 6,201,908 (Grann-908)
B-6	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 7,315,357 (Ortyn-357)
B-7	U.S. Patent No. 10,330,582 vs. U.S. Patent Appl. Pub. No. 2003/0044967 (Heffelfinger-967)
B-8	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 6,563,976 (Grann-976)
B-9	U.S. Patent No. 10,330,582 vs. U.S. Patent Pub. Appl. No. 2003/0048539 (Oostman-539)
B-10	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 8,188,438 (Li-438)
B-11	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 8,488,244 (Li-244)
B-12	U.S. Patent No. 10,330,582 vs. U.S. Patent Appl. Pub. No. 2016/0195677 (Panotopoulos-677)
B-13	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 5,835,517 (Jayaraman-517)
B-14	U.S. Patent No. 10,330,582 vs. CA2771324A1 (Patt-324)
B-15	U.S. Patent No. 10,330,582 vs. BD LSR II System (BD LSR II or BD LSR II System)
B-16	U.S. Patent No. 10,330,582 vs. BD LSRFortessa System (BD LSRFortessa or BD LSRFortessa System)
B-17	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 6,198,864 (Lemoff-864)
B-18	U.S. Patent No. 10,330,582 vs. Luminex
B-19	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 7,212,343 (He-343)
B-20	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 4,284,412 (Hansen-412)
B-21	U.S. Patent No. 10,330,582 vs. BD FACSAArray
B-22	U.S. Patent No. 10,330,582 vs. Cytex's Curved-Mirror DXP Wavelength Division (de)Multiplexer Detectors
B-23	U.S. Patent No. 10,330,582 vs. <i>Flow Cytometer in the Infrared: Inexpensive Modifications to a Commercial Instrument</i> , International Society for Analytical Cytology, Part A 67A:104-111 (Stewart-2005)
B-24	U.S. Patent No. 10,330,582 vs. U.S. Patent No. 8,605,283 (Ilkov-283)

C. '106 Patent

Exhibit No.	Prior Art Reference
C-1	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 8,284,402 (Frazier-402)
C-2	U.S. Patent No. 12,174,106 vs. U.S. Patent Appl. Pub. No. 2016/0195677 (Panotopoulos-677)
C-3	U.S. Patent No. 12,174,106 vs. WO 2010/101623 A1 (Thomas-623)
C-4	U.S. Patent No. 12,174,106 vs. U.S. Patent Appl. Pub. No. 2003/0044967 (Heffelfinger-967)
C-5	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 7,315,357 (Ortyn-357)
C-6	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 6,563,976 (Grann-976)
C-7	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 6,201,908 (Grann-908)
C-8	U.S. Patent No. 12,174,106 vs. <i>Design and Characterization of a Compact Dual Channel Virus Counter</i> , Cytometry Part A 65A:140–47 (2005) (Stoffel 2005)
C-9	U.S. Patent No. 12,174,106 vs. U.S. Patent Pub. Appl. No. 2003/0048539 (Oostman-539)
C-10	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 7,212,343 (He-343)
C-11	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 4,284,412 (Hansen-412)
C-12	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 5,835,517 (Jayaraman-517)
C-13	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 8,188,438 (Li-438)
C-14	U.S. Patent No. 12,174,106 vs. BD LSR II System (BD LSR II or BD LSR II System)
C-15	U.S. Patent No. 12,174,106 vs. (BD LSRFortessa or BD LSRFortessa System)
C-16	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 8,488,244 (Li-244)
C-17	U.S. Patent No. 12,174,106 vs. WO 1994/029695 (Gjelsnes-695)
C-18	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 6,198,864 (Lemoff-864)
C-19	U.S. Patent No. 12,174,106 vs. Luminex
C-20	U.S. Patent No. 12,174,106 vs. CA2771324A1 (Patt-324)
C-21	U.S. Patent No. 12,174,106 vs. BD FACSAArray
C-22	U.S. Patent No. 12,174,106 vs. Cytex's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors
C-23	U.S. Patent No. 12,174,106 vs. <i>Flow Cytometer in the Infrared: Inexpensive Modifications to a Commercial Instrument</i> , International Society for Analytical Cytology, Part A 67A:104-111 (Stewart-2005)
C-24	U.S. Patent No. 12,174,106 vs. U.S. Patent No. 8,605,283 (Ilkov-283)

D. '107 Patent

Exhibit No.	Prior Art Reference
D-1	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 8,284,402 (Frazier-402)
D-2	U.S. Patent No. 12,174,107 vs. U.S. Patent Appl. Pub. No. 2016/0195677 (Panotopoulos-677)
D-3	U.S. Patent No. 12,174,107 vs. WO 2010/101623 A1 (Thomas-623)
D-4	U.S. Patent No. 12,174,107 vs. U.S. Patent Appl. Pub. No. 2003/0044967 (Heffelfinger-967)
D-5	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 7,315,357 (Ortyn-357)
D-6	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 6,563,976 (Grann-976)
D-7	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 6,201,908 (Grann-908)
D-8	U.S. Patent No. 12,174,107 vs. <i>Design and Characterization of a Compact Dual Channel Virus Counter</i> , Cytometry Part A 65A:140–47 (2005) (Stoffel 2005)
D-9	U.S. Patent No. 12,174,107 vs. U.S. Patent Pub. Appl. No. 2003/0048539 (Oostman-539)
D-10	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 7,212,343 (He-343)
D-11	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 4,284,412 (Hansen-412)
D-12	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 5,835,517 (Jayaraman-517)
D-13	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 8,188,438 (Li-438)
D-14	U.S. Patent No. 12,174,107 vs. BD LSR II System (BD LSR II or BD LSR II System)
D-15	U.S. Patent No. 12,174,107 vs. BD LSRFortessa System (BD LSRFortessa or BD LSRFortessa System)
D-16	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 8,488,244 (Li-244)
D-17	U.S. Patent No. 12,174,107 vs. WO 1994/029695 (Gjelsnes-695)
D-18	U.S. Patent No. 12,174,107 vs. U.S. Patent No. 6,198,864 (Lemoff-864)
D-19	U.S. Patent No. 12,174,107 vs. Luminex
D-20	U.S. Patent No. 12,174,107 vs. CA2771324A1 (Patt-324)
D-21	U.S. Patent No. 12,174,107 vs. BD FACSAArray
D-22	U.S. Patent No. 12,174,107 vs. Cytek's Curved-Mirror DxP Wavelength Division (de)Multiplexer Detectors
D-23	U.S. Patent No. 12,174,107 vs. <i>Flow Cytometer in the Infrared: Inexpensive Modifications to a Commercial Instrument</i> , International Society for Analytical Cytology, Part A 67A:104-111 (Stewart-2005)
D-24	U.S. Patent No. 12,173,107 vs. U.S. Patent No. 8,605,283 (Ilkov-283)

CERTIFICATE OF SERVICE

The undersigned hereby certifies that a true and correct copy of the foregoing
**DEFENDANT CYTEK BIOSCIENCES, INC.'S REVISED INITIAL INVALIDITY
CONTENTIONS** was served on the following persons by email on July 11, 2025:

Omar A. Khan
Jeffrey Dennhardt
Lauren E. Matlock-Colangelo
WILMER CUTLER PICKERING
HALE AND DORR LLP
7 World Trade Center
250 Greenwich Street
New York, NY 10007
(212) 230-8800
omar.khan@wilmerhale.com
Jeffrey.Dennhardt@wilmerhale.com
Lauren.Matlock-
Colangelo@wilmerhale.com

Frederick L. Cottrell III (#2555)
Kelly E. Farnan (#4395)
Christine D. Haynes (#4697)
RICHARDS, LAYTON & FINGER,
P.A.
One Rodney Square
920 North King Street
Wilmington, Delaware 19801
(302) 651-7700
cottrell@rlf.com
farnan@rlf.com
haynes@rlf.com

Asher S. McGuffin
WILMER CUTLER PICKERING
HALE AND DORR LLP
60 State Street
Boston, MA 02109
(617) 526-6000
Asher.McGuffin@wilmerhale.com

Attorneys for Plaintiff Beckman Coulter, Inc.

/s/ Dustin M. Knight

Dustin M. Knight