IN THE UNITED STATES DISTRICT COURT

FOR THE DISTRICT OF DELAWARE

CORNING INCORPORATED, et al.,	:	
	:	
Plaintiffs,	:	
	:	
v.	:	Civil Action No. 03-633-JJF
	:	
SRU BIOSYSTEMS, et al.,	:	
	:	
Defendants.	:	

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MEMORANDUM OPINION

November 15, 2005
Wilmington, Delaware

Farnan, District Judge.

This action was brought by Corning Incorporated and Artificial Sensing Instruments ASI AG (collectively "Corning") against SRU Biosystems, LLC, SRU Biosystems, Inc. and SRU Biosystems Holdings, LLC (collectively, "SRU") for infringement of U.S. Patent No. 4,815,843 (the "'843 patent"). Corning contends that SRU directly infringed and induced infringement of the '843 patent. SRU denies infringement and has filed counterclaims for declaratory judgment that the '843 patent is not infringed and is invalid for lack of a written description and obviousness, and unenforceable as a result of inequitable conduct. SRU also contends that it is entitled to attorneys' fees, because this case is an "exceptional case" under 35 U.S.C. § 285.

The Court has subject matter jurisdiction over this action pursuant to 28 U.S.C. §§ 1331 and 1338, because this action arises under the patent laws of the United States. In addition, the Court has subject matter jurisdiction over SRU's counterclaims pursuant to 28 U.S.C. §§ 1338, 2201 and 2202, because SRU seeks declaratory judgment with regard to claims arising under the patent laws of the United States.

The Court conducted a five-day bench trial on the claims, counterclaims and defenses raised by the parties. This

Memorandum Opinion constitutes the Court's Findings of Fact and Conclusions of Law on the issues tried before the Court.

BACKGROUND

I. Procedural Background

On July 10, 2003, Corning filed this action alleging direct, induced, and contributory infringement of claims 1, 2, 23, 24, 25, and 30 of the '843 patent and seeking monetary damages. On August 29, 2003, SRU answered the Complaint and filed counterclaims for breach of contract, trade secret misappropriation, tortious interference with advantageous relationship, and declaratory judgments of noninfringement and invalidity of the '843 patent and U.S. Patent No. 5,071,248 (the "'248 patent"). On June 14, 2004, SRU requested leave to amend its Answer to add an affirmative defense and counterclaim asserting inequitable conduct. The Court granted SRU's motion for leave to amend its answer. (D.I. 237).

On September 14, 2004, the Court entered a Stipulated Order dismissing with prejudice SRU's breach of contract, trade secret misappropriation, and tortious interference counterclaims (D.I. 197). On November 5, 2004, the Court entered an Order granting SRU's Motion For Summary Judgment regarding claims 23, 24, 25, and 30 of the '843 patent. (D.I. 234). On November 16, 2004, the Court entered a Stipulated Order dismissing SRU's counterclaims on the '248 patent. (D.I. 256). As a result, the

only remaining issues to be resolved by the Court are the issues of infringement, validity, and enforceability of claims 1 and 2 of the '843 patent. Further, Plaintiffs no longer seek monetary damages, but only injunctive relief. (D.I. 236).

II. Factual Background

A. The Parties

Plaintiff Artificial Sensing Instruments ASI AG ("ASI") is a corporation organized and existing under the laws of Switzerland, with offices in Zurich, Switzerland. ASI is the owner, by assignment from the inventors, of the '843 patent. Plaintiff Corning Incorporated is a New York corporation with offices in Corning, NY. Corning Incorporated is the exclusive licensee of the '843 patent throughout the United States.

Defendant SRU Biosystems, LLC and Defendant SRU Biosystems Holdings, LLC are Delaware limited liability companies with offices in Woburn, Massachusetts. Defendant SRU Biosystems, Inc., is the successor in interest to these limited liability companies, and all three entities have conducted their business under the name "SRU Biosystems."

B. The Technology Generally

This action arises in connection with technology used in the pharmaceutical industry for identifying chemical compounds which may be useful drugs. Drugs work in the body by binding to certain target molecules to affect the function and operation of

that molecule. A molecule that binds to another molecule is referred to as a ligand. A ligand and its target molecule are shaped complementary such that they fit together like a hand in a glove. Tr. 52-107. In a healthy person, a naturally occurring ligand in the environment binds to a target molecule to produce a normal physiological response. For example, a pollen ligand binds to a histamine receptor to cause an immune response. In a person suffering from a disease, a ligand similarly binds to a target molecule, but the target molecule transmits an excessive signal, causing an abnormal physiological response. Id.

In the drug discovery process, pharmaceutical companies look for drugs that will bind with the malfunctioning target molecules. Such binding can block the natural ligand from binding and thus prevent the abnormal physiological response. Id. Pharmaceutical companies keep libraries of up to 2 million different drug compounds. Thus, efficient drug discovery requires that each drug be tested quickly. Tr. at 61:12-15.

To identify which compounds might solve a particular problem, companies use a process called high-throughput screening ("HTS") to screen large numbers of compounds against a particular target molecule. Tr. at 96:20-23. Until recently, pharmaceutical companies used only one form of HTS, a process called label dependent detection. Such detection uses radioactive or fluorescent labels to observe binding. First,

researchers attach labels to the ligands. Next, the researchers attach the labeled ligands to the target molecules. The drug candidate is then introduced. If a positive reaction occurs, the labeled ligand is knocked off the target and replaced by the drug candidate. Binding is detected by determining whether the label is still present in the sample after the drug candidate is introduced. Tr. at 68:10-17, 69:13-19. Problems associated with label dependent technology include health and safety concerns from the use of radioactive labels, difficulty attaching fluorescent tags to natural ligands, and difficulty reading fluorescent tags accurately because many compounds fluoresce at the same wavelength as the tags. Tr. 67:19-68:9.

The technology at issue in this case utilizes a newer form of HTS called label independent detection ("LID"). LID can detect binding without preparing and attaching labels, and thus, LID requires fewer steps and takes less time. Tr. at 77:16-79:13, 69:24-70:10. LID technology also overcomes the problems associated with using radioactive or fluorescent material as tags. LID utilizes optics to determine whether binding has occurred. A light sensor measures a structure's refractive index, a physical property that affects the speed of light. By measuring the refractive index before and after the introduction of a drug candidate, the sensor can determine whether binding has occurred.

C. The '843 Patent

The '843 patent was issued on March 28, 1989. In relevant part, it claims:

> 1. An optical sensor for detecting chemical, biochemical or biological substances in a sample, comprising:
>
> > a waveguiding structure formed by a waveguiding film covering a substrate, wherein the waveguiding film has a refractive index at least 1% higher than the refractive index of the substrate;
> >
> > a diffraction grating contained in the waveguiding structure; and
> >
> > a chemo-responsive layer covering the waveguiding film in a region around the diffraction grating, wherein said chemo-responsive layer is capable of binding with the substances to be assayed and has a thickness of less than one wavelength.
>
> 2. An optical sensor according to claim 1, wherein the waveguiding structure outside the region around the diffraction grating is covered by a protective layer.

The parties disputed six terms used in the claims of the '843 patent. The Court has construed those terms as follows:

a) "Waveguiding structure" is used interchangeably with "waveguide" and is defined as: "A structure formed by a waveguiding film and a substrate and containing a diffraction grating";

b) "Waveguide film" means: "A film which, in combination with a sample having a lower index of refraction and a substrate can guide light along a path";

c) "Diffraction grating" means: "Any arrangement in the waveguiding structure that imposes a periodic variation of amplitude and/or phase on an incident wave";

d) "Wavelength" means: "A wavelength of light at which the optical sensor, including the waveguiding structure, waveguiding film, and diffraction grating, detects chemical, biochemical or biological substances in the sample";

e) "Effective index" means: "A number that relates the propagation velocity of light guided in a waveguide to the speed of light in a vacuum";

f) "Measuring the effective index and effective index change" means: "determining the effective index" and "determining the effective index change."

(D.I. 156).

DISCUSSION

I. Infringement Of The '843 Patent

A. Applicable Law

A patent is infringed when a person "without authority makes, uses or sells any patented invention, within the United States during the term of the patent . . . ." 35 U.S.C. § 271(a). Determining infringement requires a two step inquiry. Step one requires a court to construe the disputed terms of the patent at issue. Step two requires a court to compare the accused products with the properly construed claims of the patent. Step one is a question of law; step two is a question of fact. Markman v. Westview Instruments, Inc., 52 F.3d 967, 979-81 (Fed. Cir. 1995) (en banc), aff'd, 517 U.S. 370 (1996).

Infringement may be proven under either of two theories: literal infringement or the doctrine of equivalents. Literal infringement occurs when each element of at least one claim of

the patent is found in the alleged infringer's product. Panduit Corp. v. Dennison Mfg. Co., 836 F.2d 1329, 1330 n. 1 (Fed. Cir. 1987); Robert L. Harmon, Patents and the Federal Circuit 195 & n. 31 (3d ed.1994). An accused product that does not literally infringe upon the express terms of the patent may nonetheless be found to infringe if there is equivalence between the elements of the accused product and the claimed elements of the patented invention. See generally Warner-Jenkinson, 520 U.S. 17 (1997). For there to be infringement under the doctrine of equivalents, the accused product or process must embody every element of a claim, either literally or by an equivalent. Id. at 41. Thus, the mere showing that an accused device is equivalent overall to the claimed invention is insufficient to establish infringement under the doctrine of equivalents. The party asserting infringement under either theory has the burden of proof and must meet its burden by a preponderance of the evidence. SmithKline Diagnostics, Inc. v. Helena Lab. Corp., 859 F.2d 878, 889 (Fed. Cir. 1988) (citations omitted).

B. Whether Corning Has Established, By A Preponderance Of The Evidence, That SRU's Accused Product Infringes The '843 Patent

Corning contends that the evidence adduced at trial establishes that SRU's BIND sensor infringes claims 1 and 2 of the '843 patent literally, or in the alternative, under the doctrine of equivalents. In response, SRU contends that its

accused product, the BIND sensor, does not infringe the '843 patent, because it does not contain a "waveguiding structure." Specifically, SRU contends that the BIND sensor lacks two necessary elements of the "waveguiding structure" as that term has been defined by the Court, a waveguiding film and a diffraction grating.

Comparing the accused product with the claims at issue, the Court concludes that Corning has established that SRU directly and literally infringes the '843 patent. In reaching this conclusion, the Court makes the following additional factual findings and legal conclusions.

1. Claim 1 of the '843 patent

a. **An optical sensor for detecting chemical, biochemical or biological substances in a sample, comprising;**

SRU does not dispute that its BIND sensor is an optical sensor for detecting chemical, biochemical and biological substances as required by the preamble of claim 1 of the '843 patent. PTX-101 at Request Nos. 5-7, Tr. 472:15-473:2; D.I. 206, Sched. A., No. 14-15. Accordingly, the Court concludes that the SRU sensor satisfies the preamble of the '843 patent.

b. **a waveguiding structure formed by a waveguiding film covering a substrate, wherein the waveguiding film has a refractive index at least 1% higher than the refractive index of the substrate**

SRU also does not dispute that its BIND sensor contains a

substrate. D.I. 206, Sched. A. No. 17, Tr. 479:11-24; PTX-136 at CORNING-0364300. The substrate is cured epoxy made of either ZPUA or FW44A, with an index of refraction of 1.39 and 1.45, respectively. Tr. 195:14-23, 196:3-9. The cured epoxy is formed in the shape of "teeth" with a period between the teeth of 550 nanometers, the depth of each tooth about 200 nanometers and the width of each tooth about 225 nanometers. Tr. 196:10-197:4. The cured epoxy lies on top of a polyester sheet, and the thickness of the cured epoxy on top of the sheet varies between one and five microns. Tr. 197:5-8. Accordingly, the Court concludes that SRU's sensor meets the substrate requirement of this element of the '843 patent.

The Court also concludes that SRU's BIND sensor meets the waveguiding film requirement of this element. A waveguiding film is a film, which in combination with a sample having a lower index of refraction and a substrate can guide light along a path. In the SRU's BIND sensor, the waveguiding film is a titanium oxide film with an index of refraction of 2.25. Tr. 197:9-18, 480:20-482:5. The 2.25 refractive index of the titanium oxide is more than 50% greater than the refractive index of either the ZPUA substrate with a refractive index of 1.45 or the FW44A substrate with a refractive index of 1.39, which meets the requirement in claim 1 that the film have a refractive index at least 1% higher than the refractive index of the substrate. Tr.

481:9-17. The titanium oxide film is 120 nm thick and small amounts of titanium oxide coat the sides of each of the epoxy "teeth." Tr. 197:19-24. The titanium oxide film lies on top of or covers the cured epoxy substrate as required by claim 1. PTX-136 at CORNING-0364300, Figure 1(b); Tr. 197:9-12, 407:10-408:5.

SRU contends that its BIND sensor lacks the waveguiding film needed to form the waveguiding structure, because its structure does not guide light along a path as required by the Court's definition of waveguiding film.[1] SRU contends that its structure is a "guided-mode resonant filter" which acts like a wavelength selective mirror, reflecting a particular wavelength while transmitting other wavelengths.

While the Court agrees with SRU that its sensor is a guided mode resonant filter, the Court is not persuaded that it acts like a wavelength selective mirror or that it fails to guide light. SRU relies on the FDTD analysis performed by Dr. Buckman to argue that its structure does not guide light, but the Court is persuaded that the existence of guided light is evident from Dr. Buckman's analysis. As Corning's Dr. Pollock pointed out, an interference pattern represented by alternating bright and dim

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[1] SRU also contends that its BIND sensor does not contain a diffraction grating as required by the Court's definition of a waveguiding structure. Although the issue of diffraction arises in discussing the capacity of the BIND sensor to guide light, the Court will more fully discuss the existence of a diffraction grating in the '843 patent in Section I.B.1.c. of this Memorandum Opinion.

lines is observable in Dr. Buckman's FDTD simulation which demonstrates that SRU's sensor guides light. DTX-58; Tr. 1270:18-1272:6. The interference pattern results from interference between the downward traveling light and light that is being guided laterally by the sensor. DDX-5, DDX-9, Tr. 1271:1-1272:6; PDX-135; Tr. 1276:9-1277:9, 1281:18-1286:4. Dr. Buckman's simulation also shows that once an initial pulse enters the sensor and a reflection and a transmission occur, a downward emission of light from the sensor continues long after the initial pulse leaves the region. Specifically, the initial pulse lasted 50 femtoseconds, but the downwardly emitted light lasted 300-400 femtoseconds. The delayed emission of downward traveling light would not occur if the sensor acted as a mirror and simply reflected the light back. Tr. 1273:8-1275:2. Rather, the Court is persuaded that the delayed emission occurs because the downward traveling light spends more time traveling or being guided laterally within the sensor. Stated another way, the downwardly emitted light is not a reflection, but energy that is diffracted into the sensor and temporarily stored there as it travels along the sensor and then diffracted downward out of the sensor long after the initial pulse was gone. A true reflection would disappear once the initial impulse is gone. Id.

Further, Dr. Pollock's FDTD analysis confirms that SRU's sensor guides light at all wavelengths below 1500 nm, which is

the wavelength of all resonant wavelengths used by SRU. In the Court's view, Dr. Pollock's simulation demonstrates that light is coupled into, guided and then coupled out of the SRU sensor. As Dr. Pollock explained, the light in his FDTD analysis travels upward and has planar wavefronts without a change in intensity or dimension. If light were not guided through such a structure, it would spread, thereby changing in intensity and dimension. PTX 91-92; Tr. 456:10-457:8; 457:13-458:14.

SRU also directs the Court to the articles written by Wang and Magnusson for the proposition that a guided mode resonant filter does not guide light along a path. However, the Court does not understand these papers to support SRU's proposition. In the Wang and Magnusson papers, a "guided mode" is defined as a pure mode which loses no energy. The authors recognize that this is an ideal state and that the device described in the papers will not support such a guided mode, because the gratings cause energy loss. The authors also recognize that a leaky mode exists. PTX 134 at 3; Tr. 464:17-466:4. A leaky mode is a reference to a mode[2] that leaks off a waveguide. Such a leaky mode may result due to coupling by a diffraction grating. Tr. 425:24-426:7, 469:2-13. Stated another way, a leaky mode guides light along a path made leaky by a diffraction grating.

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[2] A mode "is a distribution of light which acts as an ensemble." Tr. 392:10-14.

Because a diffraction grating exists in the technology described by the '843 patent, it is a leaky mode. As defined by the Court, the technology described in the '843 patent guides light, yet in the terminology used by Wang and Magnusson, even the '843 patent would not be considered a guided mode, because energy loss is caused by the diffraction grating preventing a pure mode. Similarly, in guided mode resonant filters, like the SRU BIND sensor, light is guided along a path, but in the terms of the Wang and Magnusson paper, it is described as leaky mode. That the SRU device guides light in a leaky mode is further demonstrated by drawings and articles prepared by Dr. Cunningham, both of which acknowledge that laterally coupled light is propagated in the BIND sensor, albeit for a very short distance.[3] PTX-14 at SRU-083088; PTX-49 at SRU-123329; PTX 21 at SRU-019130; PTX-35 at SCHR-000043.

The Court's conclusion that SRU's sensor guides light is also supported by the testimony and analysis of Corning's Dr. Mark Krol. With regard to his analysis of SRU's published structure, Dr. Krol explained that an ideal guided mode cannot be excited in SRU's device, but it does have a "quasi-guided mode" as distinguished from a theoretically pure mode with no energy loss. Krol Dep. Tr. 68:24-69:22, 72:23-73:15, 89:2-90:7; DTX-74

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[3] The Court notes that its definitions of a waveguiding structure and waveguiding film do not specify any distance that the light must travel to be considered to be guided along a path.

at CORNING-0203349, 0203358. Dr. Krol further explained that SRU's published structure works in the following way: "The grating couples an external wave to the guided wave of the waveguide structure, but because the grating is still present, the guided wave cannot propagate as an ideal guided mode, and hence, becomes a leaky wave or a leaky guided mode within the structure. Just as the grating coupled an external field to the guided mode, the grating couples the guided mode to an external field." Krol Dep. Tr. 72:25-73:7. The quasi-guided mode operation of SRU's sensor described by Dr. Krol is consistent with the guided mode resonance theories in the Wang and Magnusson papers.[4] Id. at 73:10-20.

Further, the Court credits the testimony of Dr. Pollock who disagreed with SRU that guided mode resonant filters do not guide a mode. Dr. Pollock explained that there are two types of leaky modes, "a leaky mode which indicates you couldn't have a guided mode because the index structure is wrong, and that's often used

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[4] Stated simply, the debate regarding the Wang and Magnusson papers comes down to how the terminology is used in the papers. SRU contends that guided mode resonant sensors cannot guide light and supports its contention with a paragraph from Wang and Magnusson stating that guided mode resonant sensors are characterized by the "absence of guided modes rather than their presence." DTX-61 at 1472. As the Court has explained, however, the guided mode used in Wang and Magnusson is a pure mode, in which no energy loss occurs. Thus, the absence of a guided mode does not mean that light is not guided at all. Rather, as Wang and Magnusson explain, light is still guided along a path in a guided mode resonant sensor, but it is guided in a "leaky mode" in contrast to a "pure mode."

with rays," and "a leaky mode which is consistent with Wang and Magnusson which is a mode which has coupling." Tr. 1352:12-1353:11. Dr. Pollock further explained that "[t]he whole theory of guided mode resonant filters requires light to couple into a waveguide and go through some period of modulation before it couples back out." Tr. 1266:8-21. The only way that the SRU BIND sensor can select a particular wavelength is for the light to be diffracted in the structure. Tr. 1266:13-21. As Dr. Pollock explained "[t]he only way you get the wavelength selectivity physically is to get that light into a structure where it has to periodically interact with a period of teeth. The longer it interacts, the narrower the line." Tr. 1266:17-21. To selectively take one wavelength and return it is due to refraction, not reflection. Tr. 1266:13-21. The Court finds Dr. Pollock's testimony in this regard to be consistent with the teachings of the Wang and Magnusson papers. The Court further finds that the SRU BIND sensor is not a wavelength selective mirror, but a diffractor in which light is guided along a path in a leaky mode. Tr. 1265:9-11. Accordingly, the Court concludes that Corning has established by a preponderance of the evidence that the SRU BIND sensor guides light as required by the Court's construction of the term "waveguiding film."

c. **a diffraction grating contained in the waveguiding structure; and**

SRU also contend that its BIND sensor does not contain a

diffraction grating required by the Court's definition of waveguiding structure and the third element of claim 1 of the '843 patent. The Court defined a diffraction grating as "any arrangement in the waveguiding structure that imposes a periodic variation of amplitude and/or phase on an incident wave." Based on the testimony of Dr. Pollock, the Court is persuaded that the SRU BIND sensor contains a diffracting grating meeting this definition. Tr. 473:6-475:9, 478:21-479:3, 481:18-24, 1208:13-15. In addition to Dr. Pollock's testimony concerning diffraction in a guided mode resonant filter discussed above in the context of the waveguiding film, Dr. Pollock's opinion is also supported by SRU documents, specifically SRU's 2002 Business Plan provided to Schroeder Ventures and an outline for a paper for publication prepared by Dr. Cunningham, SRU's Chief Technical Officer. SRU's business plan states that "[t]he BIND sensor combines the properties of a diffraction grating with an optical waveguide to produce a structure that divides incoming white light into forward diffracted, backward diffracted and laterally guided components that interfere with each other to reflect only one wavelength." PTX-35 at SCHR-00043, Tr. 474:17-475:9. This statement is then illustrated with a drawing that shows light is diffracted twice in SRU's sensor. Incoming light is bent 90 degrees into the waveguiding film and travels left and right. It is coupled in the film and then diffracted a second time and is

bent 90 degrees so that it leaves the sensor in a downward direction. As light travels down the waveguiding film, some light is coupled out of the film at each tooth of the diffraction grating and travels downward toward the light source. Tr. 410:17-411:7. In a similar vein, Dr. Cunningham's outline, prepared prior to the initiation of this litigation by Corning, indicates that his paper will "[d]escribe how our device combines the properties of a diffraction grating and a waveguide" and further explain that "laterally traveling leaky modes interfere with forward/backward diffracted light to produce or narrow resonant reflection." PTX-46 at 122953.

The diffracting grating in SRU's sensor imposes a periodic variation of amplitude and/or phase. Tr. 475:10-14. The periodic structure in SRU's sensor modulates the phase front of the incident wave and couples energy into the horizontally-traveling mode. Tr. 475:10-14, 481:18-24. Dr. Pollock's testimony is supported by his accompanying calculations, including his calculation of the resonant wavelength of SRU's BIND sensor. For SRU's device to function, there must be a resonant structure. The resonant structure in SRU's device is created through the use of a diffraction grating which couples light into a laterally propagating mode. Tr. 477:13-478:2. Dr. Pollock calculated the resonant wavelength of SRU's BIND sensor and obtained a resonant wavelength just over 850 nm, precisely

the resonant wavelength asserted by Dr. Cunningham at trial. Tr. 1293:5-1295:7, 1296:13-1298:16. These calculations demonstrate that SRU's grating structure satisfies the grating equation for first order diffraction, which means that it will couple 850 nm light into the waveguiding film 90 degrees to the left and 90 degrees to the right of the normal incidence angle, or laterally along the axis of the titanium oxide film to the right and left. Dr. Pollock's conclusion that the SRU sensor has a diffraction grating is also supported by his physical demonstrations at trial using green and red light. As Dr. Pollock explained, both of these demonstrations showed results consistent with diffraction in the SRU sensor, not reflection. Tr. 439:22-442:1; 663:20-666:5; PTX-99A; PTX-99B.

Dr. Buckman testified that the SRU sensor has a periodic grating structure, and SRU contends that this structure is a sub-wavelength structure that produces only zero order beams. A subwavelength structure is a periodic structure where the period of the structure is shorter than the wavelength of light being used. Subwavelength structures cannot function as diffraction gratings. However, based on the foregoing discussion, the Court is not persuaded that the SRU sensor uses a subwavelength structure. The Court's finding in this regard is also supported by Figure 2 of the Wang and Magnusson article which does not show that a guide mode resonant filter produces only zero order beams

as SRU contends. Rather, as Dr. Pollock explained, the text describing this figure shows that guided mode resonant filters are capable of producing diffracted light. DTX-62 at SRU-000466; Tr. 1286:5-1287:17. Moreover, Dr. Pollock explained that when light is in a material with a higher index of refraction than the index of refraction of a vacuum which is 1.00, the wavelength of the light decreases. Tr. 401:24-403:14, 740:9-743:11; PDX-143. Because the operating wavelength of the SRU sensor shortens down to the incidence of refraction of the material used in the sensor, the SRU sensor does not operate as a subwavelength structure. Tr. 443:20-446:22, 729:9-21. Stated another way, the grating period in the SRU sensor is not less than the wavelength of light being used in the sensor. Accordingly, the Court concludes that Corning has demonstrated by a preponderance of the evidence that SRU's BIND sensor has a diffraction grating contained in the waveguiding structure.

d. **a chemo-responsive layer covering the waveguiding film in a region around the diffraction grating wherein said chemo-responsive layer is capable of binding with the substances to be assayed and has a thickness of less than one wavelength.**

SRU has admitted that its sensors include a chemo-responsive layer capable of binding with a substance to be assayed. PTX 101, Request No. 27 at 10; Tr. 482:24-483:17. SRU has also admitted its sensors have been used with a chemo-responsive layer that has a thickness of less than one wavelength. D.I. 296,

Sched. A No. 20, 25; Tr. 483:22-485:7. One of Corning's experts, Dr. Mrksich, testified regarding the existence of a chemo-responsive layer in SRU's sensor, Tr. 347:19-353:9, 361:13-362:14, and SRU's Dr. Cunningham also confirmed in his testimony that a chemo-responsive layer exists in the BIND Sensor. Tr. 198:1-199:15. The Court further credits the testimony of Dr. Pollock, who explained that the chemo-responsive layer in SRU's BIND Sensor covers the waveguiding film in a region around the diffraction grating. Tr. 484:10-20. Accordingly, the Court concludes that Corning has demonstrated by a preponderance of the evidence that SRU's BIND Sensor meets the chemo-responsive layer element of the '843 patent.

e. Summary

In sum, the Court finds that the SRU BIND Sensor contains each of the elements of claim 1 of the '843 patent. In reaching this conclusion, the Court credits the testimony of Corning's expert, Dr. Pollock, over the testimony of SRU's expert, Dr. Buckman. Accordingly, the Court concludes that Corning has established, by a preponderance of the evidence, that SRU literally infringes claim 1 of the '843 patent, and therefore, a judgment of infringement will be entered in favor of Corning and against SRU on claim 1 of the '843 patent.

2. Claim 2 of the '843 patent

a. **An optical sensor according to claim** 1,

For the reasons discussed infra, the Court concludes that the SRU BIND Sensor is an optical sensor according to claim 1.

b. **wherein the waveguiding structure outside the region around the diffraction grating is covered by a protective layer.**

The Court also concludes, for the reasons discussed previously, that the BIND Sensor contains a waveguiding structure and a diffraction grating. The Court further concludes, based on Dr. Pollock's testimony which the Court finds credible, that the waveguiding structure outside the region around the diffraction grating is covered by a protective layer as required by claim 2 of the '843 patent. The SRU sensor has wells, each of which has a round region containing a diffraction grating. A microtiter plate is outside those regions and the microtiter plate is bonded to the titanium oxide layer by an epoxy. The epoxy forms a protective layer which isolates the surrounding area from the adjacent medium. Tr. 491:19-492:16. Accordingly, the Court concludes that the SRU BIND Sensor satisfies this element of claim 2 of the '843 patent.

c. Summary

In sum, the Court finds that the SRU BIND Sensor contains each of the elements of claim 2 of the '843 patent. Accordingly, the Court concludes that Corning has established, by a preponderance of the evidence, that SRU literally infringes claim 2 of the '843 patent, and therefore, a judgment of infringement

will be entered in favor of Corning and against SRU on claim 2 of the '843 patent.

II. Inducement Of Infringement Of The '843 Patent

A. Applicable Law

In pertinent part, 35 U.S.C. § 271(b) provides "whoever actively induces infringement of a patent shall be liable as an infringer." One induces infringement under Section 271(b) by actively and knowingly aiding and abetting another's direct infringement. C.R. Bard, Inc. v. Advanced Cardiovascular Sys., Inc., 911 F.2d 670, 675 (Fed. Cir. 1990). As such, a claim for inducement of infringement is dependent upon proof of direct infringement. Epcon Gas Systems, Inc. v. Bauer Compressor, Inc., 279 F.3d 1022, 1033 (Fed. Cir. 2002).

Although not expressly stated in the statute, intent to induce infringement is required to establish liability under Section 271(b). Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469 (Fed. Cir. 1990). Intent to induce infringement may be proven by circumstantial evidence, as well as by direct evidence. Water Techs. v. Calco, Ltd., 850 F.2d 660, 668 (Fed. Cir. 1988).

B. Whether Corning Has Established, By A Preponderance Of The Evidence, That SRU Induced Infringement Of The '843 Patent

Corning contends that SRU induced infringement of the '843 patent through its contacts with Millenium Pharmaceuticals. SRU

offers no response to the allegations of inducement of infringement except for its contention that it does not directly infringe the '843 patent, and therefore it cannot be held liable for inducement of infringement.

Reviewing the evidence offered by Corning, the Court concludes that Corning has established by a preponderance of the evidence that SRU induced the infringement of the '843 patent. For the reasons discussed previously, the Court has concluded that SRU directly and literally infringes claims 1 and 2 of the '843 patent. In addition to those findings of facts and conclusions of law, the Court also makes the following additional factual findings and legal conclusions regarding inducement of infringement.

SRU conducted beta testing of its BIND sensor and reader at Millennium Pharmaceuticals. Tr. 278:14-20; Li Dep. 84:5-8. In October 2003, SRU supplied Millennium with an APOT2 BIND reader system, 96 plates and 384 well plates. Tr. 279:7-9; Hill Dep. 29:21-30:9, Li Dep. 84-85. By February 2004, SRU was supplying Millenium with 20 sensors per month for Millenium to use. Tr. 279:13-16. Millenium has received a total of about 60 sensor plates from SRU. Hill Dep. 30:10-31:1.

SRU's Dr. Cunningham confirmed that Millenium's sensor assays involved the attachment of material to the sensor surface to create a chemo-responsive layer. At times, SRU applied the

chemo-responsive layer, and at times the sensor plates were not prepared with any particular attachment chemistry and Millenium applied the layer using detailed instructions provided to it by SRU. Tr. 353:10-360:8; Hill Dep. Tr. 34:3-35:18, 38:12-16, 40:2-4, 73:5-19, 74:19-75:3, 75:10-13, 17-21; PTX-73 at 55-64; PTX-76 at MILL000004-8. Millenium followed the instructions SRU provided and created chemo-responsive layers on sensors purchased from SRU for use in chemical assay testing. Hill Dep. 34:3-36:6, 38:12-16, 39:12-40:6, 73:20-74:1, 75:1-9; PTX-76 at MILL000004-8. Using SRU's instructions, Millenium took plates it received from SRU without any attachment chemistry and added a layer of poly-phenylalanine lysine ("PPL") or polyacrylic acid ("PAA"). For those plates that Millenium received from SRU that were already prepared with PPL or PAA attachment chemistry, Millenium attached a variety of proteins to create chemo-responsive layers, again using instructions provided by SRU for the attachments of the proteins.

In addition, SRU provided Millenium with a user's manual for its BIND plate reader. PTX-73, Hill Dep. Tr. 32:21-33:8. This manual provided instructions for conducting experiments to detect the binding of biotin to avidin, a protein that Millenium attached to the PAA coated plates provided by SRU. PTX-73 at MILL000048-53; Hill Dep. 34:3-22. Millennium conducted experiments that were similar to those described in the SRU

user's manual, including instructions for conducting experiments to detect the binding of Immunoglobulin G to Protein A. Hill Dep. Tr. 35:1-20; PTX-73 at MILL000054-57.

In sum, the Court concludes that SRU's activities with Millenium are sufficient circumstantial evidence to demonstrate, by a preponderance of the evidence, that SRU knew and expected that Millennium would attach chemoresponsive layers to its sensors and that its sensors would be used for sensing. Millennium followed instructions provided by SRU for attaching the chemo-responsive layer and conducted experiments based on materials provided to it by SRU. Thus, the Court concludes that SRU actively aided and abetted Millennium's infringement of the '843 patent. Accordingly, the Court concludes that Corning has established that SRU induced infringement of the '843 patent, and therefore, the Court will enter judgment in favor of Corning and against SRU on the issue of inducement of infringement under 35 U.S.C. 271(b).

III. Invalidity Of The '843 Patent

SRU contends that the '843 patent is invalid. Specifically, SRU contends that (1) all the claims of the '843 patent fail to satisfy the written description requirement, and (2) claim 1 would have been obvious to one of ordinary skill in the art in the mid-1980s. The Court will address each of SRU's contentions in turn.

A. Whether The Claims Of The '843 Patent Fail To Satisfy The Written Description Requirement

1. The parties' contentions

SRU's argument concerning the written description requirement is premised on the following limitation which was added to the '843 patent's original application: "a chemo-responsive layer ... [that] has a thickness of less than one wavelength." PTX 1. SRU contends that this additional thickness limitation has no support in the original patent application, and the original patent application fails to differentiate among chemo-responsive layers based on thickness. Thus, SRU maintains that the claims of the '843 patent to fail to satisfy the written description requirement.

In response, Corning contends that, although the original application does not mention the claimed thickness range, a person of ordinary skill in the art would have realized the limitation based on the disclosures made in the '843 patent. Specifically, Corning contends that the '843 patent discusses the physical properties of the evanescent field and clearly states that the evanescent field extends "less than one wavelength into the sample." Because the evanescent field extends less than one wavelength into the sample and one of ordinary skill in the art would understand that the chemo-responsive layer and the resulting chemisorbate layer would have to be positioned within

the evanescent field, it follows that the chemo-responsive layer would have to be less than one wavelength thick.

2. Applicable law

The written description requirement of Section 112 requires an applicant to give a description that clearly allows persons of ordinary skill in the art to realize that he or she invented what is claimed. Vas-Cath Inc. v. Mahurkar, 935 F.2d 1555, 1563 (Fed. Cir. 1991). According to the Federal Circuit, this requirement is satisfied when an applicant demonstrates that he or she is "in possession" of the invention claimed. Lockwood v. Am. Airlines, 107 F.3d 1565, 1572 (Fed. Cir. 1997). To show that one is "in possession," an applicant must describe the invention, with all its claimed limitations, and not only what makes it obvious. Id. While "the disclosure as originally filed does not have to provide *in haec verba* support for the claimed subject matter at issue," the disclosure must still convey with reasonable clarity to those skilled in the art that the inventor was in possession of the invention. Purdue Pharma L.P. v. Faulding Inc., 230 F.3d 1320, 1323 (Fed. Cir. 2000). Stated another way, "one skilled in the art, reading the original disclosure, must immediately discern the limitation at issue in the claims." Id. The policy behind the written description requirement is to prevent overreaching and post hoc claims that were not part of the original invention.

Whether a patent complies with the written description requirement is a question of fact. Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1330 (Fed. Cir. 2003). The burden of establishing that a patent fails the written description requirement rests with the challenging party. Brooktree Corp. v. Advanced Micro Devices, Inc., 977 F.2d 1555, 1574-75 (Fed. Cir. 1992). Because issued patents carry a presumption of validity, a challenger can must demonstrate invalidity by clear and convincing evidence. WMS Gaming, Inc. v. Int'l Game Tech., 184 F.3d 1339, 1354 (Fed. Cir. 1999).

3. The level of one of ordinary skill in the art

As a threshold matter to the invalidity inquiry, the parties dispute the degree of skill for one ordinarily skilled in the art described by the '843 patent in the mid-1980s. SRU contends, based on the testimony of Dr. Buckman that one of ordinary skill in the art would have a Ph.D in either electrical engineering, physics or chemistry and two to three years of compensating laboratory experience depending on the person's academic background. Corning disagrees with Dr. Buckman's assessment of the qualifications of one skilled in the art of the '843 patent and contends that such a person need not have a Ph.D. Rather, based on Dr. Pollock's testimony, Corning contends that a person of ordinary skill in the art of the '843 patent would have a

bachelor's degree in engineering, physics or chemistry, a few years of experience with optical instruments gained by working or in research and some experience in adding chemo-responsive layers.

The Court agrees with Corning and credits the testimony of Dr. Pollock concerning the requirements for one skilled in the art. Dr. Pollock's criteria for one skilled in the art takes into account not only the educational level and years of experience of the inventors, but also of others working in the field. Dr. Pollock's assessment also recognizes that one of ordinary skilled in the art is presumed to think along conventional lines without undertaking his or her own innovations. DTX 92 at ¶ 23. In the Court's view, Dr. Buckman's definition of one ordinarily skilled in the art includes criteria which are too high to constitute ordinary skill. As Dr. Buckman explained, his definition includes himself and Dr. Tiefenthaler, an inventor of the patent, as well as professors at various universities. These individuals are leaders and experts in their field, and in the Court's view, have skill beyond the "ordinary level."

4. Whether the disclosure of the '843 patent demonstrates with reasonable clarity that the inventor was in possession of the claimed invention

Viewing the specification from the point of view of one of ordinary skill in the art, the Court finds that the specification

contains sufficient information to demonstrate that the inventor possessed the invention described in the patent. The inventors of the '843 patent expressly state that the evanescent wave penetrates for less than a wavelength into the sample. Tr. 1234:16-1235:1. In order to measure changes in the refractive index of the sample, the evanescent wave must penetrate into the sample. The adsorption layer on top of the chemo-responsive layer must be within the evanescent field to have a useful sensor. Tr. 1236:1-4. To sense the change in the adsorbate layer, the chemo-responsive layer must be less than the penetration depth. Thus, the chemo-responsive layer must be less than the depth of the evanescent field to sense the adsorbate layer on the chemo-responsive layer. Tr. 1236:5-15, 1302:23-1316:24. Because the evanescent field penetrates less than one wavelength into the sample and the chemo-responsive layer must be less than the depth of the evanescent field, it follows that the chemo-responsive layer must be less than one wavelength thick.

SRU contends that one of ordinary skill of the art would know that the evanescent field can actually extend into the sample more than one wavelength. However, SRU's argument ignores the express teaching of the specification and is premised upon a level of skill in the art that is so high that it would require the individual to disregard the teachings of the patent. In the Court's view, one of ordinary skill in the art would not

postulate beyond the teachings of the patent. Rather, such postulation would be the domain of those with more extraordinary skill.

SRU further contends that the portion of the specification describing that the evanescent wave penetrates less than one wavelength into the sample does not refer to a chemo-responsive layer. While the original application does not specifically mention a "chemo-responsive layer," it describes the use of an optional layer. PTX-2 at 9-10. The original application goes on to state that the sensor may be made selective by either the addition of a selective membrane or "[b]y appropriate choice of the additional layer it is attained that preferentially the substance to be detected physisorbs or chemisorbs in the volume or at the surface of the additional layer or causes chemical reactions and/or induces certain molecules of the additional layer to desorb." PTX-2 at 10. Thus, the original application discloses the use of an additional layer that has the properties of a chemo-responsive layer.

As Dr. Pollock explained, the overall theme of the patent deals with evanescent sensors and the patent describes a device for sensing adsorbate layers on surfaces. The inventors explain that the evanescent wave extends out one wavelength and they discuss in various places in the specification the impact of layer thickness and how layer thickness needs to be controlled

due to the depth penetration of the evanescent wave. Tr. 1302:12-1316:24. Accordingly, the Court is persuaded that the original specification as a whole demonstrates that the inventor conceived of a sensor with a chemo-responsive layer less than one wavelength thick.

5. Summary

In sum, the Court finds that the specification, taken as a whole, contains sufficient detail to demonstrate that the inventors were in possession of the claimed limitation that the chemo-responsive layer be less than one wavelength thick. One of ordinary skill in the art, without a Ph.D., would adhere to the teachings of the patent that the evanescent wave penetrate less than one wavelength into the sample. With this premise as a basis, such a person would also recognize that the chemo-responsive layer is within the evanescent field, and therefore, must be less than one wavelength thick. Accordingly, the Court concludes that SRU has not demonstrated by clear and convincing evidence that the '843 patent is invalid for lack of written description.

B. Whether The Claims Of The '843 Patent Are Obvious

1. The parties' contentions

SRU contends that the '843 patent would have been obvious to one of ordinary skill in the art in the mid-1980s in light of three prior art references, (1) K. Tiefenthaler and W. Lukosz,

"Integrated optical switches and gas sensors," Optics Letters, vol. 10, no. 4, pp. 137-139 (April 1984) (the "Tiefenthaler paper") (DTX-27); (2) Carter, U.S. Patent No. 4,608,344 (the "Carter patent") (DTX-43); and (3) Sutherland, et al., "Immunoassays at a Quartz-Liquid Interface: Theory, Instrumentation and Preliminary Application to the Fluorescent Immunoassay of Human Immunoglobulin G," Journal of Immunological Methods, vol. 74, pp. 253-265 (1984) (the "Sutherland paper") (DTX-51). SRU contends that the applicants relied on the thickness limitation discussed in the context of the written description requirement to distinguish the claimed invention over the prior art. However, SRU maintains that prior art disclosed a chemo-responsive layer less than one wavelength thick, yet that art was not disclosed to the patent examiner. SRU also contends that there are no secondary considerations indicative of non-obviousness, and therefore, the '843 patent should be declared invalid based on obviousness.

In response, Corning contends that SRU's obvious arguments rest on a combination of the three prior art references and no motivation existed to combine these references to lead to the invention of the '843 patent. Corning contends that SRU's contention that such a combination was obvious is based solely on hindsight, rather than on the appropriate level of one skilled in the art in the mid-1980s. Corning further contends that Dr.

Buckman's testimony concerning obviousness was based on an incorrect construction of the claims, and that secondary considerations exist that support a conclusion of non-obviousness.

2. Applicable law

In pertinent part, 35 U.S.C. 103 provides that a patent may not be obtained "if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious to a person having ordinary skill in the art . . ." 35 U.S.C. 103. Obviousness is a question of law that is predicated upon several factual inquiries. Richardson-Vicks v. Upjohn Co., 122 F.3d 1476, 1479 (Fed. Cir. 1997). Specifically, the trier of fact must consider (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; (3) the differences between the claimed subject matter and the prior art; and (4) secondary considerations of non-obviousness, such as commercial success, long felt but unsolved need, failure of others, and acquiescence of others in the industry that the patent is valid. Graham v. John Deere Co., 383 U.S. 1, 17-18 (1966).

When multiple prior art references are being considered in determining obviousness, courts are to consider whether the prior art would have suggested to those of ordinary skill in the art that they should make the claimed composition or device, or carry

out the claimed process. Stated another way, "to establish obviousness based on a combination of the elements disclosed in the prior art, there must be some motivation, suggestion or teaching of the desirability of making the specific combination that was made by the applicant." In re Werner Kotzab, 217 F.3d 1365, 1369-1370 (Fed. Cir. 2000). As the Federal Circuit has suggested, applying this requirement strictly is "the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis . . . ." In re Gartside, 203 F.3d 1305, 1319 (Fed. Cir. 2000). As with invalidity based on a lack of written description, invalidity based on obviousness must be established by clear and convincing evidence. WMS Gaming, Inc. v. Int'l Game Tech., 184 F.3d 1339, 1354 (Fed. Cir. 1999).

3. Analysis

Reviewing the scope and content of the prior art in light of the claimed invention and in the context of the definition of one skilled in the art provided by Dr. Pollock, the Court concludes that SRU has not established that the '843 patent is invalid as obvious under Section 103. At trial, SRU's expert, Dr. Buckman acknowledged that no single prior art reference published before the filing date of the '843 patent shows a diffraction grating in combination with a waveguiding film and a chemo-responsive layer. Tr. 1237:22-1238:4. Dr. Buckman also admitted that SRU's counsel

selected the Carter and Sutherland articles for him to consider, and he pointed to no independent reason for selecting these references from the available prior art. Tr. 1242:5-12. In addition, Dr. Buckman's invalidity opinions were rendered prior to the Court's claim construction rulings in this case, and therefore, to the extent that they are premised on incorrect assumptions about the meaning of the terms of the patent, the Court concludes they are not credible.

With respect to motivation to combine the prior art references, Dr. Buckman referred to general motivations of devising a more sensitive sensor and making more sales in the industry; however, Dr. Buckman did not provide any specific motivations, suggestions or teachings that would lead one skilled in the art to combine the prior art references. Indeed, Dr. Buckman admitted, both during trial and during his deposition, that his knowledge provided the basis for combining these references. Tr. 1251:14-1254:18, 1253:7-16. Based on the testimony adduced at trial, the Court further finds that Dr. Buckman relied on the elements of the '843 patent to select the methods disclosed in the prior art as a way to improve the Tiefenthaler switch. In the Court's view, Dr. Buckman's approach to the obviousness inquiry treads too closely to the type of hindsight analysis that the Federal Circuit has cautioned against to be considered clear and convincing evidence of obviousness.

See Biacore, AB v. Thermo Bioanalysis Corp., 79 F. Supp. 2d 422, 464 (D. Del. 1999) (citations omitted) (recognizing that "[h]indsight reconstruction . . . may not be used 'to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention'").

The Court's conclusion that SRU has not demonstrated the obviousness of the '843 patent by clear and convincing evidence is further supported by the scope and content of the prior art, the differences between the prior art and the claimed invention and the secondary considerations of obviousness. In the mid-1980s, two types of biosensors were known in the art, labeled and non-labeled sensors. Labeled sensors involve tagging a radioactive species or a flourescent species, and non-labeled sensors, like those disclosed in the Carter patent, allow one to directly measure a presence of the species without doing the tagging. Although very sensitive, labeled sensors presented the disadvantage of having to figure out how to attach the tags, which implicate health issues. Other techniques in the art included surface plasmon resonance, refractometry and ellipsometry and reflectometry. Tr. 1317:3-1319:3. As Dr. Pollock explained, the '843 patent does not encompass any of these previous techniques and uses a different technology and a different physical effect for sensing binding. Tr. 1319:4-10.

The device disclosed in the Tiefenthaler paper is quite

different from that which is disclosed in the '843 patent and the Carter and Sutherland references. The Tiefenthaler paper does not disclose a biosensor at all, but a switch that responds to gas or vapor. Tiefenthaler's switch observes the change in the speed of light caused by a change in the sensor's effective index of refraction when vapor or gas is present. Tr. 1319:11-1320:20. Although Carter and Sutherland disclose biosensors, the sensors use techniques different from that disclosed in the '843 patent and work on principles very different from that disclosed in Tiefenthaler. Both Carter and Sutherland measure the amount of light that passes through a sensor using scattering, fluorescence or absorption. The Carter reference discloses the use of a quartz plate similar to a microscope slide rather than a waveguiding film, and the Carter reference does not include a diffraction grating. DTX-43 at SRU-000827; Tr. 1243:15-1245:13. The Sutherland reference discloses a device in which a flourescent tag is attached to the complimentary antigens in the sample. Tr. 1251:4-7. Both Carter and Sutherland work on similar principles involving the amount of light scattered and/or absorbed to give indications of whether binding has occurred. Neither the Carter nor the Sutherland devices operate based on sensing a change in the speed of light, which is the principle used in the Tiefenthaler paper. Tr. 1323:7-20, 1324:1-7. Given that the Tiefenthaler device works on such different principles

than those disclosed in Carter and Sutherland, the Court is not persuaded that one skilled in the art would have been motivated to combine these references.

As Dr. Pollock explained there were several acceptable biosensors being used in the mid-1980s and the focus was on making these devices smaller, not abandoning them altogether to move to a new technology, namely that disclosed in the Tiefenthaler paper of using light speed. Further, the Court is persuaded by Dr. Pollock's testimony that the Carter and Sutherland references actually teach away from the use of light speed, because it would not make sense to use a reactive layer that works based on scattering or fluorescence in a device that senses changes in the speed of light. Tr. 1335:23-1336:10.

In addition, the Court notes that several secondary considerations of non-obviousness weigh in favor of the Court's conclusion that SRU has not demonstrated that the '843 patent is invalid. Label dependent assays have been used in the art since at least 1979, but they have a variety of limitations. First, each drug needs to be labeled and some drug candidates cannot be labeled. Second, if radioactive labels are used, the "shelf-life" for the drug's storage is reduced. Further, the labeling technique is a time consuming process taking 11-14 months to select the right location for the label and validate the assay. Tr. 68:18-69:12. Given the limitations on label dependent

technology, there has been a long felt need for label independent technology. Indeed, SRU's internal documents describe label-independent detection as meeting an "unmet need" in the industry. PTX-77 at TVM2357-58, 2363. The technology in the '843 patent is a type of label independent technology which overcomes many of the limitations of the labeling techniques. Further, the interest of others in the '843 patent also support a conclusion of non-obviousness. For example, Oerlikon-Buhrle Holding AG invested in Dr. Tiefenthaler's technology and partnered with Dr. Tiefenthaler to form ASI. In addition, SRU itself has touted the importance of a label-free optical biosensor's using the technology of the '843 patent in its business plan, technical publications and presentations. PTX 14, 35, 45-48.

In sum, the Court concludes that it would not be obvious to one skilled in the art to combine the reactive layers disclosed in Carter and Sutherland that work on principles related to light amounts, with a device that works on principles of light speed as disclosed in the Tiefenthaler papers to create that which is embodied in the '843 patent. The Court also concludes that some objective criteria support the Court's conclusion of non-obviousness. Accordingly, the Court concludes that SRU has not established by clear and convincing evidence that the '843 patent was obvious in light of the prior art disclosed in the Tiefenthaler, Carter and Sutherland references, and therefore,

the Court will enter judgment in favor of Corning and against SRU on the question of validity of the '843 patent under 35 U.S.C. § 103.

CONCLUSION

For the reasons discussed, the Court concludes that Corning has established, by a preponderance of the evidence, that SRU literally infringes claims 1 and 2 of the '843 patent and that SRU induced infringement of the '843 patent. The Court also concludes that SRU has failed to establish, by clear and convincing evidence, the invalidity of the '843 patent based on obviousness and lack of written description. Accordingly, the Court will enter judgment in favor of Corning and against SRU on Corning's claims of infringement and inducement of infringement and on SRU's claims of invalidity. By separate Memorandum Opinion and Order, the Court will address the remaining issues of (1) inequitable conduct, (2) whether this case is exceptional within the meaning of 35 U.S.C. § 285 and (3) whether Corning is entitled to a permanent injunction upon the completion of the proceedings related to the supplementation of the record on the question of inequitable conduct.

An appropriate Order will be entered.

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CORNING INCORPORATED, et al.,	:	
	:	
Plaintiffs,	:	
	:	
v.	:	Civil Action No. 03-633 JJF
	:	
SRU BIOSYSTEMS, et al.,	:	
	:	
Defendants.	:	

O R D E R

At Wilmington, this 15 day of November 2005, for the reasons set forth in the Memorandum Opinion issued this date;

IT IS HEREBY ORDERED that:

1. U.S. Patent No. 4,815,843 is valid under 35 U.S.C. § 112 based on the written description requirement and 35 U.S.C. § 103 based on obviousness.

2. Defendants literally infringe claims 1 and 2 of U.S. Patent No. 4,815,843.

3. Defendants induced infringement of claims 1 and 2 of U.S. Patent No. 4,815,843 under 35 U.S.C. § 271(b).

Joseph J. Farnan, Jr.
UNITED STATES DISTRICT JUDGE