

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

CORNING INCORPORATED and :
ARTIFICIAL SENSING INSTRUMENTS :
ASI AG, :
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 : Plaintiffs, :
 : Civil Action No. 03-633 JJF
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 : v. :
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 : SRU BIOSYSTEMS, LLC, SRU :
 BIOSYSTEMS, INC., and SRU :
 HOLDINGS, LLC, :
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 :
 : Defendants. :
 :

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Attorneys for Defendants SRU Biosystems, LLC, SRU Biosystems, Inc., and SRU Biosystems Holdings, LLC.

MEMORANDUM OPINION

July 9, 2004

Wilmington, Delaware

Farnan, District Judge.

Presently before the Court are the issues of claim construction presented by the parties Corning Incorporated and Artificial Sensing Instruments ASI AG (collectively "Corning") (D.I. 135) and SRU Biosystems, LLC, SRU Biosystems, Inc., and SRU Biosystems Holdings, LLC (collectively "SRU"). (D.I. 133.) The parties dispute the definition of the following six (6) terms used in the claims of U.S. Patent No. 4,815,843 (the "'843 patent"): 1) waveguiding structure; 2) waveguide film; 3) diffraction grating; 4) wavelength; 5) effective index; and 6) measuring the effective index or the effective index change. The Court construes the disputed terms as follows:

I. Waveguiding Structure

A. Contentions

SRU contends that the Court should construe this term to mean "a structure that functions as an optical waveguide, i.e., that confines light so that it can be transported through the material with minimal loss over a significant distance." SRU contends that the '843 patent uses the terms "waveguiding structure" and "waveguide" interchangeably, and that the terms are similarly used in the art. Additionally, SRU contends that the '843 patent refers to an optical waveguide and, that an optical waveguide, according to its ordinary meaning, is a structure that confines light so that it can be transported with

minimal loss over a significant distance. SRU further contends that adopting Corning's construction of the term at issue would render it superfluous because Corning does nothing more than recite the elements of the entire claim.

Corning responds that SRU's proposed construction is not supported by the claim language, which recites the elements of the term at issue, or the specification, which demonstrates that "waveguiding structure" is a generic term used for a variety of optical components. Corning also contends that SRU impermissibly attempts to import limitations into the term from particular embodiments in the specification. Further, Corning contends that the literature in the relevant art does not support SRU's construction, that SRU's construction does not include all the embodiments of the '843 patent, and that its construction is vague.

B. Decision

1. Whether "waveguiding structure" is the equivalent of "waveguide"

After considering the parties' arguments and the applicable law, the Court concludes that the '843 patent uses the terms "waveguiding structure" and "waveguide" interchangeably.

Initially, the Court notes that, contrary to the cases relied on by Corning, the instant construction is consistent with the plain language of the claims at issue. In Pandrol USA v. Airboss Railway Prods., Inc., 320 F.3d 1354 (Fed. Cir. 2003), the Federal

Circuit commented that it had previously determined that the district court's construction of "adhering material," which limited the term to a bonding layer, was incorrect because it was inconsistent with the plain language of the claims and excluded embodiments that indicated that "adhering" could occur without bonding. Id. at 1360. Unlike the district court in Pandrol, the Court's equating of "waveguiding structure" with "waveguide" in this case is not inconsistent with the plain language of the claims nor does it exclude embodiments of the invention detailed in the specification. In addition, the Court's construction does not render relevant dependent claims meaningless. See In re Cruciferous Sprout Litig., 301 F.3d 1343, 1348-49 (Fed. Cir. 2002) (holding that a construction which renders dependent claims meaningless is inconsistent with the plain language of the claims).

Further, the Court concludes that equating "waveguiding structure" with "waveguide" is supported by the ordinary meaning of the term as understood by one of ordinary skill in the art. See J.D. Jackson, Classical Electrodynamics 364-65 (2d ed. 1975) (interchangeably using the terms wave guides and other wave guiding structures).

Finally, the Court is not persuaded by Corning's arguments that interchangeable use of the terms leads to an impermissible limitation of the terms by incorporating various embodiments

described in the specification into the claims. The section of the specification relied on by Corning describes the range of embodiments of the '843 patent. It states:

Waveguiding may occur not only in a thin planar layer but also in any other waveguiding structures, in particular in strip waveguides where the waveguiding structure has the form of a strip.

'843 patent, col. 3, ll. 53-56. The Court agrees with Corning that, if it were to read the embodiments of "strip" or "thin planar layer" into the term waveguide, the Court would run afoul of the precept not to import embodiments as limitations into claim terms, see Electro Med. Sys. v. Cooper Life Sci., Inc., 34 F.3d 1048, 1054 (Fed. Cir. 1994); however, the Court's construction adds no such limitations here.

2. Whether the term "waveguide" or "waveguiding structure" includes the limitation of "confining light so that it can be transported with minimal loss over a significant distance"

a. Confining light so that it can be transported with minimal loss

The Court concludes that the term "waveguide" does not have a consistent meaning in the art that would define the term to have the limitation of "confining light so that it can be transported with minimal loss," as proposed by SRU. Treatises referred to by the Court define "waveguide" either broadly, see Simon Ramo, et al., Fields and Waves in Communication Electronics 392 (2d ed. 1984) ("structure . . . that causes a wave to propogate in a chosen direction with some measure of

confinement"), narrowly, see Ilan Chabay, Optical Waveguides, Photon Plumbing for the Chemistry Lab: Fiber Optics, Waveguides, and Evanescent Waves as Tools for Chemical Analysis, Analytical Chemistry, Vol. 54, No. 9, at 1071 (Aug. 1982) ("By constraining electromagnetic waves to . . . a waveguide, optical energy can be transported through a material with minimal loss") (the "Chabay reference"); John David Jackson, Classical Electrodynamics 364 (2d ed. 1975) ("The general requirement for a guide of electromagnetic waves is that there be a flow of energy only along the guiding structure and not perpendicular to it"), or without reference to the level of confinement required, see McGraw-Hill Dictionary of Scientific and Technical Journal 1747 (3d ed. 1984) ("a device which constrains or guides the propagation of electromagnetic waves along a path defined by the physical construction of the waveguide"). Accordingly, because the dictionary definition of the term "waveguide" provides a range of applicable meanings, the Court will look to the intrinsic evidence to determine which available definition is appropriate. See Novartis Pharm. Corp. v. Eon Labs Mfg., Inc., 363 F.3d 1306, 1309-10 (Fed. Cir. 2004) (stating that where a dictionary definition provides multiple meanings, courts should look to the intrinsic evidence to determine which available definition should be applied to the claim term at issue).

The '843 patent specification describes the invention with

reference to nine drawings. Two of these drawings, Figures 7 and 3, do not include SRU's limitation of "minimal loss." Figure 7 details an embodiment of the invention where light is intended to radiate away from the waveguide in order to detect binding. '843 patent, col. 9 ll. 41-53. Figure 3 details an embodiment of the '843 patent where diffraction grating couples light out of the waveguide. '843 patent, Fig. 3. These two embodiments of the '843 patent are inconsistent with SRU's limiting construction, and therefore, the Court concludes that the intrinsic evidence of the '843 patent supports an adoption of the ordinary definition of "waveguide" or "waveguiding structure" without the limitation of "minimal loss."

b. Significant distance

The Court concludes that the term "waveguide" or "waveguiding structure" does not include the limitation that light must travel through such structure over a significant distance as proposed by SRU. The Court is not persuaded that the ordinary meaning of "waveguide" includes the limitation that light travel a significant distance, see Van Norstrand's Scientific Encyclopedia 3003 (Douglas M. Considine & Glenn Considine eds., 7th ed. 1989) (providing no limitation of significant distance); Kapany, supra, at 7 (same); Jackson, supra, at 364 (same), nor is this requirement evident from the plain language of the claims.

Moreover, the Court agrees with Corning that SRU's contention that Figures 1 and 2 of the '843 patent provide this limitation is without merit. SRU asserts that one of ordinary skill in the art would divine from a study of the drawings of the '843 patent that light was intended to travel in a waveguide for a significant distance. (D.I. 143 at 3-4.) However, settled Federal Circuit precedent prohibits the importation of such dimensions where, as here, the drawings do not include quantitative measurements or a scale of the minimum distance light is intended to travel. See Hockerson-Halberstadt, Inc. v. Avia Group Int'l, Inc., 222 F.3d 951 (Fed. Cir. 2000) (citations omitted); Manual of Patent Examining Procedure § 2125 (8th ed. 2003) (the "MPEP").¹ Accordingly, the Court does not construe the term "waveguiding structure" or "waveguide" to include the requirement that light travel through the structure for a significant distance.

In sum, the Court concludes that the term "waveguiding structure" is interchangeably used with the term "waveguide" in the '843 patent, and does not include the limitation that light be "transported through the material with minimal loss over a

¹ Although the MPEP does not have the force of law, courts regularly look to it for guidance because it is "well known to those registered to practice in the PTO and reflects the presumptions under which the PTO operates." Critikon, Inc. v. Becton Dickinson Vascular Access, Inc., 120 F.3d 1253, 1257 (Fed. Cir. 1997) (citing Refac Int'l Ltd. v. Lotus Development Corp., 81 F.3d 1576, 1584 n. 2 (Fed. Cir. 1996)).

significant distance.” Therefore, the Court construes the term “waveguiding structure” or “waveguide” to mean: “A structure formed by a waveguiding film and a substrate and containing a diffraction grating.”

II. Waveguide Film

A. Contentions

SRU contends that the Court should construe the term “waveguide film” to include the limitation that it guide light by “total internal reflection.” SRU contends that this limitation is supported by the specification and various treatises. Corning responds that the plain language of the claims does not include this limitation, that the specification does not define the disputed term to include this limitation, and that one of ordinary skill in the art would understand that waveguide films exist which do not include the limitation proposed by SRU.

B. Decision

After review of the claims, specification, and authorities cited by the parties, the Court concludes that the term “waveguide film” does not include the limitation of “total internal reflection.” As an initial matter, the Court observes that the plain language of the term does not include the limitation suggested by SRU. Thus, guided by the Federal Circuit’s warning that importing limitations from the specification into claims is rarely justified, particularly when

a limitation is not in the claim, see Amgen Inc. v. Hoechst Marion Roussel, Inc., 314 F.3d 1313, 1325 (Fed. Cir. 2003); Arlington Indus., Inc. v. Bridgeport Fittings, Inc., 345 F.3d 1318, 1327 (Fed. Cir. 2003), SRU has the burden of demonstrating that the inventors of the '843 patent clearly intended the term to contain its proposed limitation.

The Court concludes that SRU has not established that the specification of the '843 patent defines "waveguide film" as requiring total internal reflection. Although the Court agrees that at various points the specification describes embodiments which include the requirement that waveguide film couple light with total internal refraction, see '843 patent at col. 2, ll. 40-44; col. 3, ll. 43-47, the specification also makes clear that waveguiding may occur in many other types of structures, without including the limitation of coupling light with total internal refraction. Id. at col. 2, ll. 53-56. Therefore, the Court concludes that although waveguiding film may propagate light with total internal reflection, neither the plain language of the claims nor the specification so limits every use of the term "waveguide film" in the '843 patent.

In sum, the Court construes the term "waveguide film" to mean: "A film which, in combination with a sample having a lower index of refraction and a substrate can guide light along a path."

III. Diffraction Grating

A. Contentions

SRU contends that the term "diffraction grating" should be defined to mean a "periodic structure that diffracts light incident upon it to produce diffracted beams of higher (non-zero) order." SRU maintains that this construction is consistent with the ordinary meaning of the term and the specification of the '843 patent. Further, SRU contends that those skilled in the art would view Corning's and SRU's definition of "diffraction grating" to be consistent.

Corning contends that the term should be defined to mean "any arrangement in the waveguiding structure that imposes a periodic variation of amplitude and/or phase on an incident wave." Corning also contends that its construction is consistent with the ordinary meaning of the term and the specification of the '843 patent.

B. Decision

After review of the parties' arguments, the claims, and the specification of the '843 patent, the Court concludes that Corning's proposed construction of the term "diffraction grating" is in accordance with the term's ordinary and customary meaning and, that as described by the specification, the term does not include the limitation offered by SRU. Therefore, the Court construes the term to mean: "any arrangement in the waveguiding

structure that imposes a periodic variation of amplitude and/or phase on an incident wave.”

IV. Wavelength

A. Contentions

The parties agree as to the meaning of the term “wavelength,” but disagree as to which wave provides the standard with which the thickness of the chemo-responsive layer is determined. Corning contends that, as used in claims 1 and 23, the wavelength is the longest wavelength of light at which the optical sensor can be operated to detect chemical, biochemical, or biological substances in the sample. Corning contends that this construction is supported by the specification and the prosecution history of the ‘843 patent.

SRU responds that the specification and prosecution history do not support Corning’s construction. SRU contends that the specification and the prosecution history only reference the actual wavelength that is used to detect chemical, biochemical, or biological substances in the sample.

B. Decision

The Court agrees with SRU that the term “wavelength” in claims 1 and 23 of the ‘843 patent refers to “a wavelength at which the optical sensor detects the chemical, biochemical, or biological substances in the sample.” The specification provides numerous examples where the wavelength referenced is the

wavelength where the optical sensor detects the effective index change, and thus, the target substance in the sample. '843 patent, col. 6, ll. 45- col. 7, l. 18; col. 7, ll. 45-49. In addition, the Court's reading of the specification and prosecution history provides no support for Corning's limiting use of the term "wavelength" to be the "longest wavelength of light at which the sensor can be operated" to detect the target substance.

In sum, the Court construes the term "wavelength" to mean: "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."

V. Effective Index

The parties dispute whether the proper construction of the term "effective index," which the parties agree means "a number that relates the propagation velocity of light guided in a waveguide to the speed of light in vacuum," also includes the limitation that the number be a "complex" number. After considering the parties' arguments and the specification of the '843 patent, the Court concludes that the proper construction of "effective index" does not include the limitation proposed by SRU.

The specification provides a definition of the term

"effective index":

The propagation velocity of a guided lightwave (subsequently called "mode") is c/N , where c is the speed of light in vacuo and N the effective refractive index of the mode guided in the waveguide. The effective refractive index N is determined by the configuration of the waveguide (thickness and refractive index of the substrate) and by the refractive index of the medium adjacent to the waveguiding film.

'843 patent, col. 2, ll. 44-52. Thus, effective index can be described algebraically as $N=c/v$, or as agreed by the parties, "a number that relates the propagation velocity of light guided in a waveguide to the speed of light in vacuum."

Absent from this definition, however, is a requirement that "N" be a complex number, as proposed by SRU, whenever used in the '843 patent. Accordingly, the Court agrees with Corning that limiting the term at issue with the subsequent example of where "N" can become a complex number when light is absorbed, see id. at col. 5-6, would impermissibly narrow the term. Therefore, the Court construes the term to mean: "A number that relates the propagation velocity of light guided in a waveguide to the speed of light in a vacuum."

VI. "Measuring the effective index" and "measuring the effective index change"

A. Contentions

SRU contends that "measuring the effective index" and "measuring the effective index change" should be construed to mean that the effective index is actually determined. SRU

contends that this construction is consistent with the ordinary and customary meaning of the term, and with the intrinsic evidence.

Corning responds that the terms at issue should be construed to mean "determining (the change in) any parameter related to the effective index of the waveguiding structure." Corning maintains that this construction is consistent with the ordinary meaning of the term "measure" and, moreover, is consistent with the intrinsic evidence.

B. Decision

Each party argues that the ordinary definition of the word "measure" supports its construction of the terms at issue.² In Webster's New Universal Unabridged Dictionary (2d ed. 1983), measure is given multiple definitions. The first definition supports SRU's proposed construction. It states that measure means: "to compute, estimate, or ascertain the extent, quantity, dimensions, or capacity of; . . . to take the dimensions of[.]" Id. at 1115. Corning, however, contends that subsequent definitions of measure provided in Webster's support its construction, particularly the definition "to estimate by

² Although the parties request the Court to define two phrases in the '843 patent - "measuring the effective index" and "measuring the effective index change" - each construction rests on how the Court defines the term "measuring." Thus, the Court's discussion of the proper construction of this term will apply to both "measuring the effective index" and "measuring the effective index change."

reference to any standard[.]” The Court disagrees.

Corning contends that the term “measuring an effective index (or change),” is appropriately defined as “determining a related parameter.” (D.I. 135 at 35.) Corning’s definition thus differs from Webster’s definition of “to estimate by reference to any standard” because Corning’s construction of “measure” eliminates the object of estimation and defines “measure” by the reference itself. Accordingly, the Court concludes that SRU’s proposed construction is in accordance with the ordinary meaning of the term, and therefore, unless Corning establishes that the inventors prescribed a definition apart from the ordinary and customary meaning, the ordinary meaning will govern. Arlington Indus., 345 F.3d at 1326 (citing Tex. Digital Sys., Inc. v. Telegenix, Inc., 308 F.3d 1193, 1204 (Fed. Cir. 2002)).

After review of the sections of the specification cited by the parties, the Court is not persuaded that the inventors of the ‘843 patent “demonstrated an intent to deviate from the ordinary and accustomed meaning of [the term at issue] by including . . . expressions of manifest exclusion or restriction[.]” Teleflex, Inc. v. Ficosa North Am. Corp., 299 F.3d 1313, 1325 (Fed. Cir. 2002) (citing SciMed Life Sys., Inc. v. Adv. Cardiovascular Sys., Inc., 242 F.3d 1337, 1344 (Fed. Cir. 2001)). Instead, the Court agrees with SRU that although the specification provides examples for using related parameters to measure the “effective index” or

"effective index change," measuring such references is not the same as determining the object of measurement - i.e. the effective index or its change - which the claims of the '843 patent explicitly require.³ In sum, the Court construes the terms "measuring the effective index and effective index change" to mean "determining the effective index" and "determining the effective index change."⁴

An appropriate Order will be entered.

³ The Court is not persuaded by Corning's citation to the prosecution history that the inventors of the '843 patent provided a meaning different than the ordinary and customary one discussed above. (See D.I. 135, Ex. G at CORNING-0134294-98.)

⁴ For the reasons stated, the Court also concludes that this construction is consistent with the terms' use in claim 28 of the '843 patent.

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Civil Action No. 03-633 JJF

ORDER

At Wilmington, this 9th day of July, 2004, for the reasons discussed in the Memorandum Opinion issued this date;

IT IS HEREBY ORDERED that:

1) The disputed terms of U.S. Patent No. 4,815,843 are defined 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."

2) The Motion For Leave To Supplement The Record And Supplementation Providing Pre-Issuance Editions Of Definitions Cited in Plaintiff's Claim Construction Brief filed by Corning Incorporated and Artificial Sensing Instruments ASI AG (D.I. 148) is **DENIED** as moot.

JOSEPH J. FARNAN, JR.
UNITED STATES DISTRICT JUDGE