

UNITED STATES DISTRICT COURT  
SOUTHERN DISTRICT OF NEW YORK

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05 Civ. 5939 (WCC)

GERTRUDE NEUMARK ROTHSCHILD, :

Plaintiff, :

- against - :

CREE, INC., :

Defendant. :

- - - - - X

**ECF CASE**

**OPINION  
AND ORDER**

**A P P E A R A N C E S :**

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**CONNER, Senior D.J.**

In this action for alleged infringement of plaintiff's U.S. patents Nos. 4,904,618 and 5,252,499 (the "618 patent" and "499 patent" respectively) by defendant Cree, Inc. ("Cree"), after a *Markman* hearing, the Court on May 3, 2007 filed an Opinion and Order ("*Rothschild I*")<sup>1</sup> construing certain disputed terms of the claims of the two patents in suit. In response to a motion by plaintiff for reconsideration or clarification of the Court's construction of two of the claim terms of the '499 patent, the Court on July 2, 2007 filed a supplemental Opinion and Order ("*Rothschild II*")<sup>2</sup> modifying its construction of one of the terms and confirming its construction of the other. Based on the Court's construction of the claims of the '499 patent, Cree now moves for a partial summary judgment of non-infringement of that patent. For the reasons stated hereinafter, that motion is denied.

**DISCUSSION**

**I. The Summary Judgment Standard**

Summary judgment may be granted only where there is no genuine issue as to any material fact and the moving party is entitled to judgment as a matter of law. *See* FED. R. CIV. P. 56 (c); *Celotex Corp. v. Catrett*, 477 U. S. 317, 322-23 (1986). The evidence must be viewed in the light most favorable to the non-moving party, with all reasonable inferences being drawn in favor of that party. *IMS Tech. Inc. v. Haas Automation, Inc.*, 206 F.3d 1422, 1429 (Fed. Cir. 2000). However, the Federal Circuit has recognized that, where appropriate, summary judgments promote efficiency

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<sup>1</sup> *Rothschild v. Cree, Inc.*, 2007 WL 1314619 (S.D.N.Y. May 3, 2007).

<sup>2</sup> *Rothschild v. Cree, Inc.*, 2007 WL 1944327 (S.D.N.Y. July 3, 2007).

by avoiding “wasteful utilization of the jury process and judicial resources.” See *Barmag Barmer Maschinenfabrik AG v. Murata Machinery, Ltd.*, 731 F.2d 831, 835 (Fed. Cir. 1984); see also *EMI Group N. Am., Inc. v. Intel Corp.*, 157 F.3d 887, 891 (Fed. Cir. 1998).

## II. The ‘499 Patent Claim Terms in Dispute

Plaintiff charges Cree with infringement of Claims 10, 12-14 and 16-20 of the ‘499 patent. Of these claims, Claim 10 is the only independent claim and all the others are dependent upon it, either directly or indirectly. Therefore, if Claim 10 is not infringed, either literally or under the doctrine of equivalents, none of the claims of the ‘499 patent are infringed. Claim 10 reads as follows:

10. A method of forming a low resistivity semiconductor from a wide band-gap semiconductor substrate that has a tendency to become compensated when it is doped, comprising selectively doping the semiconductor substrate with an effective amount of dopant to induce conductivity, together with an effective amount of atomic hydrogen to act as a compensator and block unacceptably high occurrences of other compensators, then removing an effective amount of the added hydrogen to reduce the resistivity of the semiconductor, the hydrogen removed under conditions to limit other movement within the semiconductor.

(Radulescu Decl., Ex. 1 at 6:63-7:7.)

In the Memorandum in Support of its Motion for Partial Summary Judgment, Cree contends that the following two limiting terms of Claim 10 are inapplicable to any process it employs in the manufacture of light-emitting diodes (LEDs):

**(1) “forming a low resistivity semiconductor from a wide band-gap semiconductor substrate.”** (Def. Mem. Supp. Part. Summ. J. at 11 (emphasis added by defendant).) In *Rothschild I*, the Court construed this limitation to require “forming from a pre-existing substrate.” 2007 WL

1314619, at \*9. When plaintiff moved for clarification of that construction, the Court, in *Rothschild II*, stated, “There is no apparent reason for clarification of the Court’s construction of this term. It is difficult to imagine a clearer way to say that the claim term requires a pre-existing substrate and that it does not cover doping during growth of the substrate.” 2007 WL 1944327, at \*3.

**(2) “selectively doping the semiconductor substrate with an effective amount of dopant to induce acceptable conductivity, together with an effective amount of atomic hydrogen to act as a compensator and block unacceptably high occurrences of other compensators.”** (Def. Mem. Supp. Part. Summ. J. at 16-17.) The Court, in *Rothschild I*, construed the term “substrate” to mean “an underlying base on which an epitaxial layer is grown” and the term “together with” to mean “simultaneously with.” 2007 WL 1314619, at \*12. In *Rothschild II*, the Court construed the term “atomic hydrogen” to mean “atomic hydrogen (from any source).” 2007 WL 1944327, at \*5. The Court did not discuss any of the other terms of this step of the claimed process in either of its claim construction opinions.

### **III. Limiting Effect of the Claim Preamble**

Because the first of the two terms in question, “forming a low resistivity semiconductor from a wide band-gap semiconductor substrate,” appears only in the preamble of Claim 10, we must first confront the threshold question whether a term contained in the preamble of a patent claim limits the coverage of the claim. Plaintiff argues that this term merely sets forth the “intended use” of the method described in the body of the claim and “is irrelevant to a finding of literal infringement.” (Pl. Mem. Opp. Part. Summ. J. at 19.) This is an entirely new argument which admittedly was not advanced by plaintiff during the *Markman* process. Indeed, as Cree points out, plaintiff proffered

constructions for three terms that appear only in the preamble of Claim 10. (Def. Reply Mem. Supp. Part. Summ. J. at 2.) Cree proposed different constructions of those terms. There would have been no reason to seek the Court's construction of these terms if they are, as plaintiff now contends, "irrelevant to a finding of literal infringement."

Moreover, after the Court, in *Rothschild I*, construed the "forming . . . from" term in the preamble as applying only to processes performed on a pre-existing substrate, plaintiff moved for reconsideration of that ruling, again without contending that the preamble did not limit the scope of Claim 10. Apparently plaintiff did not make that contention because she was still hoping to persuade the Court to change its construction of the term. But even after the Court, in *Rothschild II*, confirmed that construction, plaintiff still did nothing to raise the issue of the limiting effect of the preamble. Instead, the parties proceeded to discovery on the apparent assumption that the '499 patent covered only processes in which doping is performed on a pre-existing substrate. Discovery has proceeded on that basis for slightly more than a year and, unless further extended, the period for discovery will expire shortly.

Cree argues that this Court has twice ruled that the "forming . . . from" limitation in Claim 10 "requires that the substrate be doped **after it is grown**" and that plaintiff is seeking to "relitigate this Court's claim construction." (Def. Reply Mem. Supp. Part. Summ. J. at 1 (emphasis added by defendant).) Cree adds that "the parties have litigated this case for over a year based on this Court's ruling that the '499 claims cover only 'doping after growth.'" (*Id.* at 2.) But all that the Court ruled was that "the **term** 'forming . . . from' should be construed to mean **forming from a pre-existing substrate**," *Rothschild I*, 2007 WL 1314619, at \*9 (emphasis added), and "that the **claim term** requires a pre-existing substrate." *Rothschild II*, 2007 WL 1944327, at \*3 (emphasis added). The

Cree did not rule whether that term in the preamble, as thus construed, limited the scope of the claim, because neither party had raised that issue.

Cree further argues that, by her long delay in raising the issue, plaintiff has waived her right to do so. (Def. Reply Mem. Supp. Part. Summ. J. at 2.) In support of that argument, Cree relies on a single district court decision, *Civix-DDI, LLC v. Cellco Partnership*, 387 F. Supp. 2d 869, 889 (N.D. Ill. 2005), in which the court, after commenting that the defendant's non-infringement arguments implicated an issue which was "plainly one of claim construction that one or both of the parties should have raised during the *Markman* process," concluded that it "cannot find, on the record before it, that [the defendant] has waived these arguments." Cree has cited no decision in which a court has deprived a party of the right to make an argument on a patent infringement issue on the ground that the argument was waived by failure to make it during the *Markman* process and, in our independent research, we have found no such decision.

As will be apparent from the ensuing discussion, depriving plaintiff of the right to contend that the scope of Claim 10 of the '499 patent is not limited by its preamble would likely be fatal to her infringement claim against Cree. Such a draconian penalty should not be imposed on plaintiff unless her failure to raise the issue earlier has caused serious prejudice to Cree. It is true that the parties have engaged in discovery for a full year since the Court's supplemental claim construction Order, but that discovery has largely been devoted to plaintiff's efforts to learn the details of the processes employed by Cree in its commercial production of LEDs and Cree's efforts to uncover evidence relating to plaintiff's inventorship and ownership of the patents in suit – discovery that would have been necessary even if the issue of the limiting effect of the claim preamble had been raised earlier by plaintiff and will still be useful however that issue is now resolved by the Court.

Thus any prejudice to Cree resulting from plaintiff's delay in raising the issue is minor or even trivial in comparison to the injury that plaintiff would suffer if this Court were to rule that she had forfeited her right to raise the issue. On the basis of the incomplete record now before the Court, there appears to be at least a significant possibility that the invention disclosed and claimed in the '499 patent represents a substantial advance in the technology of producing short wavelength (blue and green) LEDs, although Cree denies that it benefitted from, or was even aware of, plaintiff's research and teachings. If plaintiff were effectively foreclosed from proving infringement of the '499 patent by Cree, it would be an unconscionably harsh penalty for a procedural error that apparently caused Cree no more than minor inconvenience.

Therefore, in the exercise of its discretion, the Court rules that plaintiff has not waived her right to contend that, notwithstanding the Court's construction of the "forming . . . from" term in the preamble of Claim 10 as requiring a pre-existing substrate, the preamble does not limit the scope of the claim in that respect. We must therefore resolve that issue on the merits.

Fortunately, it is an issue on which the Federal Circuit has given considerable guidance. In its Reply brief in support of the motion, Cree catalogs a number of the controlling principles enunciated by the court.

Cree relies on *Bicon, Inc. v. Straumann Co.*, 441 F.3d 945, 952-53 (Fed. Cir. 2006) in support of the proposition that the preamble is limiting if it "recites essential elements of the invention." (Def. Reply Mem. Supp. Part. Summ. J. at 2.) But in the present case all the necessary steps of the patented method are fully described in the body of Claim 10 without supplementation from the preamble, which merely indicates the desirable objective achieved by the method.

Cree also relies on *NTP, Inc. v. Research in Motion, Ltd.*, 418 F.3d 1282, 1305-06 (Fed. Cir.

2005), for the principle that the preamble is limiting if it is “essential to understand limitations or terms in the claim body.” (Def. Reply Mem. Supp. Part. Summ. J. at 3.) But here there are no limitations or terms in the body of Claim 10 that need clarification by reference to the preamble. Although, as Cree points out, there are several terms in the body of the claim, such as “semiconductor” and “substrate,” which also appear in the preamble, their meaning is in no way clarified by the preamble.

Cree further cites *Poly-America, L.P. v. GSE Lining Tech., Inc.*, 383 F.3d 1303, 1310 (Fed. Cir. 2004), for the proposition that the preamble is limiting if it recites structure or steps “underscored as important by the specification.” (Def. Reply Mem. Supp. Part. Summ. J. at 3.) Although Cree points to several terms such as “wide band-gap” and “low resistivity,” which appear in the preamble of Claim 10 and which also appear in the title of the ‘499 patent, these terms do not describe steps of the patented process but the objective it achieves.

Finally, Cree relies on *In re Cruciferous Sprout Litigation*, 301 F.3d 1343, 1347-48 (Fed. Cir. 2002), in support of the principle that the preamble is limiting if it was relied upon during prosecution “to persuade the Patent Office that the claimed invention is not anticipated by the prior art.” (Def. Reply Mem. Supp. Part. Summ. J. at 3-4.) Cree refers to several instances during prosecution of the application for the ‘499 patent when plaintiff argued that a prior patent cited by the Examiner did not teach a method for achieving “low resistivity in materials that have a tendency to become compensated” (Radulescu Decl., Ex. 6 at 4) or “how to decrease resistivity by affecting compensating impurities.” (Radulescu Suppl. Decl., Ex. 12 at 4.) However these arguments during prosecution did not specifically refer to the preamble of Claim 10 and were equally applicable to the body of the claim, which calls for doping the substrate with a dopant and atomic hydrogen “to act as a

compensator and block unacceptably high concentrations of other compensators, then removing an effective amount of the added hydrogen to reduce the resistivity of the semiconductor.” (See Radulescu Decl., Ex. 1 at 7:1-6.) Moreover, even if these arguments might be construed to estop plaintiff from contending that the terms “low resistivity” and “tendency to become compensated” in the preamble of Claim 10 do not limit the scope of the claim, there is no reason to treat the entire preamble, including the “forming . . . from” term, as limiting. At no time did plaintiff attempt to distinguish her invention from the prior art on the basis that her claims were limited to doping of a pre-existing semiconductor crystal.

There is another principle established by Federal Circuit decisions that is clearly applicable here. In *Poly-America*, 383 F.3d at 1310, the Court stated: “On the other hand, a preamble is not limiting ‘where a patentee defines a structurally complete invention in the claim body and uses the preamble only to state a purpose or intended use for the invention.’” *Id.* (citing *Rowe v. Dror*, 112 F.3d 473, 478 (Fed. Cir. 1997)). Similar statements were made in *Intirtool, Ltd. v. Texar Corporation*, 369 F.3d 1289, 1295 (Fed. Cir. 2004) (the body of the claim describes “a structurally complete invention such that deletion of the preamble phrase does not affect the structure or steps of the claimed invention”) (internal quotation marks and citation omitted), and *Pitney Bowes, Inc. v. Hewlett-Packard Co.*, 182 F.3d 1298, 1305 (Fed. Cir. 1999). Here the body of Claim 10 adequately describes a complete process; reference to the preamble is not necessary to supply missing steps or to render understandable and enabling any of the steps described. Instead, the preamble merely specifies the desirable result achieved by the process described in the body of the claim.

There is therefore no reason why the “forming . . . from” term in the preamble of Claim 10, which the Court has construed as calling for doping of a pre-existing crystal, should be deemed a

limitation of the coverage of that claim, and the Court accordingly concludes that it shall not be so regarded.

#### **IV. Cree's Accused Process**

The only method performed by Cree which allegedly infringes the '499 patent is that employed in the production of "p-type" gallium nitride (GaN) and aluminum gallium nitride (AlGaN) layers in Cree's LEDs. It is undisputed that Cree produces all such layers by a metal organic chemical vapor deposition (MOCVD) process in which the magnesium and hydrogen dopants are introduced during growth of a semiconductor layer (UF 2-4), rather than being introduced into a pre-existing solid crystalline substrate. (*See* Pl. Mem. Opp. Part. Summ. J. at 3.)

##### **A. Literal Infringement**

A patent claim is literally infringed only if every element recited in the claim, as properly construed by the court, is found in the accused device or process. *See Bai v. L & L Wings, Inc.*, 160 F.3d 1350, 1353 (Fed. Cir. 1998). As noted above, Cree has pointed to only two elements in Claim 10 that it contends are not applicable to its accused process. We shall discuss them separately below.

##### **1. The "forming . . . from" Element**

In view of the foregoing ruling that the scope of Claim 10 is not limited by this term in its preamble, Cree is not entitled to a summary judgment of non-infringement on the basis of the inapplicability of this term to its commercial process.

**2. The “selectively doping . . . with an effective amount . . . to induce conductivity. . . together with . . . atomic hydrogen to . . . block . . . other compensators” Element**

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In the Memorandum in Support of its motion, Cree argues that several terms of this element (“together with,” “effective amount . . . to induce conductivity,” and “block . . . other compensators”) are not readable on its accused process. (Def. Mem. Supp. Part. Summ. J. at 7-9.) But its only basis for that argument involves reading into each of those terms the implied requirement that the process step be performed post-growth on a pre-existing substrate.

For example, in discussing the “together with” term, Cree argues that “claim 10 further requires that the dopant and the atomic hydrogen be simultaneously doped into the pre-existing semiconductor substrate.” (Def. Mem. Supp. Part. Summ. J. at 7 (emphasis added).) And, in discussing the “block . . . other compensators” term, Cree argues that this term, in combination with the “forming . . . from” term “requires that atomic hydrogen that is introduced into a pre-existing semiconductor substrate must act to block the formation or introduction of other compensators . . . .” (*Id.* at 8 (emphasis added).) Likewise, in discussing the “effective amount . . . to induce conductivity” term, Cree argues that “[p]laintiff must not only show that Cree dopes a semiconductor substrate post-growth, but must also establish that the amount of dopant that is allegedly introduced post-growth is sufficient to provide a semiconductor substrate having ‘acceptable conductivity.’” (*Id.* (emphasis added).)

Nowhere does Cree contend that in its process of producing LEDs the dopants are not introduced simultaneously or that the hydrogen does not block other compensators or induce acceptable conductivity. It merely contends that the doping is not performed post-growth on a pre-existing substrate. The Court’s ruling that the scope of Claim 10 is not limited by the post-growth

doping of a pre-existing substrate deprives Cree's argument of any force.

Cree is therefore not entitled to summary judgment on the issue of literal infringement. Thus, there is no present need to discuss the other issues raised by Cree concerning asserted bars to reliance on the doctrine of equivalents as an alternative basis for plaintiff's claim of infringement.

### CONCLUSION

For the foregoing reasons, Cree's motion for partial summary judgment is denied.

SO ORDERED.

Dated: White Plains, NY  
July 14, 2008

  
WILLIAM C. CONNER, Senior U.S.D.J.