

United States Court of Appeals for the Federal Circuit

THE FOX GROUP, INC.
Plaintiff-Appellant,

v.

CREE, INC.,
Defendant-Appellee.

2011-1576

Appeal from the United States District Court for the Eastern District of Virginia in Case No. 10-CV-0314, Judge Rebecca Beach Smith.

Decided: November 28, 2012

CHRISTOPHER B. MEAD, London & Mead, of Washington, DC, argued for plaintiff-appellant. With him on the brief was LANCE A. ROBINSON.

DAVID C. RADULESCU, Quinn Emanuel Urquhart & Sullivan LLP, of New York, New York, argued for defendant-appellee. With him on the brief were RAYMOND N. NIMROD and ROBIN M. DAVIS.

Before NEWMAN, O'MALLEY, and WALLACH, *Circuit Judges.*

Opinion for the court filed by *Circuit Judge WALLACH*.
Opinion concurring-in-part, dissenting-in-part filed by
Circuit Judge O'MALLEY.

WALLACH, *Circuit Judge*.

The Fox Group, Inc. ("Fox") appeals from the decision of the United States District Court for the Eastern District of Virginia granting Cree, Inc.'s ("Cree") motion for summary judgment of invalidity of U.S. Patent No. 6,562,130 (filed May 4, 2001) ("the '130 patent"). *Fox Group, Inc. v. Cree, Inc.*, 819 F. Supp. 2d 524, 537 (E.D. Va. 2011). We find that the district court did not err in granting summary judgment in Cree's favor based upon the invalidity of claims 1 and 19 of the '130 patent under 35 U.S.C. § 102(g). However, because there was no case or controversy at the time of the judgment over the remaining claims of the '130 patent ("unasserted claims"), the district court erred in holding the unasserted claims of the '130 patent invalid. Accordingly, we affirm-in-part and vacate-in-part.

BACKGROUND

Fox is the assignee of the '130 patent, entitled Low Defect Axially Grown Single Crystal Silicon Carbide, which claims a low defect silicon carbide ("SiC") crystal and relates to a method and apparatus of said crystal. '130 patent col. 3 ll. 15-27. The '130 patent claims priority from application No. PCT/RU97/00005, filed on January 22, 1997. *Id.* at col. 1 ll. 6-10. "SiC crystal is a semiconductor material grown via man-made methods and used in high-temperature and high-power electronics such as light sources, power diodes, and photodiodes. To be viable as a semiconductor, SiC material must contain a rela-

tively low level of defects.” *Fox Group*, 819 F. Supp. 2d at 526-27.

Fox argues that Cree infringes claims 1 and 19 of the ’130 patent. Claim 1 recites:

A silicon carbide material comprising an axial region of re-crystallized single crystal silicon carbide with a density of dislocations of less than 10^4 per square centimeter, a density of micropipes of less than 10 per square centimeter, and a density of secondary phase inclusions of less than 10 per cubic centimeter.

’130 patent col. 8 ll. 6-11. Claim 19 is very similar, but requires a seed crystal and requires a region of axially re-crystallized silicon carbide initiated at the growth surface of the seed crystal. *Id.* at col. 9 l. 37–col. 10 l. 6. Claim 19 states:

A silicon carbide material, comprising:
a single crystal silicon carbide seed crystal, said single crystal silicon carbide seed crystal having a growth surface; and
a region of axially re-crystallized silicon carbide, said region of axially re-crystallized silicon carbide initiating at said growth surface of said single crystal silicon carbide seed crystal, said region of axially re-crystallized silicon carbide having a density of dislocations of less than 10^4 per square centimeter, a density of micropipes of less than 10 per square centimeter, and a density of secondary phase inclusions of less than 10 per cubic centimeter.

Id.

Cree has engaged in research to grow low defect SiC crystals since its founding in 1987. In February 1995, as part of its research program, Cree grew boule G0259 and sent Dr. Michael Dudley, of the State University of New York at Stony Brook, a wafer sliced from that boule, wafer G0259-3 (the “Kyoto Wafer”), for X-ray topography analysis. After the initial analysis, Cree asked Dr. Dudley to do more analysis “to see if there are more 1c dislocations in areas with no micropipes than in areas with micro-pipes.” JA2121. Dr. Dudley advised Cree that there was an exceptionally low defect area in the Kyoto Wafer.

At the 1995 International Conference on SiC and Related Materials (the “Kyoto Presentation”). Dr. Calvin Carter, one of the Cree inventors, showed a cropped image and described the low defect nature of the Kyoto Wafer, stating that it had an area with less than 1,000 dislocations per square centimeter, and no micropipes. In an article published in 1996 (“1996 Article”), entitled “Recent progress in SiC crystal growth,” Cree described the Kyoto Wafer. JA2129. The 1996 Article disclosed that Cree had “recently had a breakthrough that . . . dramatically reduced” micropipe density. JA2127. The article included an image of the X-ray topograph generated during Dr. Dudley’s analysis, showing the high quality SiC that Cree had grown. The caption explained that the image was of a “14 x 4.5 mm area of a 4H-SiC wafer. Excluding the portions with dislocation tangles, this area has a total line defect density of about 1000 cm⁻². *Id.*

In 2007, Dr. Dudley analyzed a wafer from Cree at Fox’s request. In April 2011, Dr. Dudley reviewed the 1995 X-ray topographs of the Kyoto Wafer and determined that a region of the wafer had an average dislocation density of less than 10⁴ per square centimeters, no micropipes, and no secondary phase inclusion.

Fox originally brought suit against Cree on June 29, 2010.¹ In its Complaint, Fox sought injunctive relief as well as compensatory damages against Cree for infringing the '130 patent and U.S. Patent No. 6,534,026 ("the '026 patent").² In its Answer, Cree filed counterclaims seeking declarations that the '026 and '130 patents are not infringed, invalid, and unenforceable. Cree filed a motion for summary judgment of invalidity on April 11, 2011.

On June 10, 2011, the court issued its claim construction opinion construing terms in both the '130 patent and the '026 patent. On July 20, 2011, in response to a motion from Fox, the district court entered a judgment of non-infringement of the '026 patent for Cree and dismissed Cree's counterclaims related to the '026 patent. The court then denied Cree's motion for summary judgment of non-infringement of the '026 patent as moot and considered only whether there was any genuine issue of material fact concerning the validity and infringement of the '130 patent.

On August 8, 2011, the district court granted Cree's motion for summary judgment on its counterclaim seeking a declaration that the '130 patent is invalid, and dismissed or denied the other claims and counterclaims on infringement and unenforceability as moot. *Id.* at 537. Fox timely appealed. We have jurisdiction pursuant to 28 U.S.C. § 1295(a)(1).

¹ Fox also filed suit against Dow Corning Corp. On October 25, 2010, the action against Dow Corning Corp. was transferred to the United States District Court for the Southern District of New York. *Fox Group, Inc. v. Cree, Inc.*, 749 F. Supp. 2d 410 (E.D. Va. 2010).

² The '026 patent is no longer a subject of this litigation. See *Fox Group*, 819 F. Supp. 2d at 527 n.4.

DISCUSSION

Fox’s challenge to the district court’s grant of summary judgment of invalidity is premised on the notion that Cree is not a prior inventor of the low defect wafer claimed by Fox, or, if it was, that Cree abandoned, suppressed, or concealed the invention. Fox also argues that the district court erred in entering an order invalidating the entire ’130 patent, when only claims 1 and 19 were asserted. We address each in turn.

“This court reviews the district court’s grant or denial of summary judgment under the law of the regional circuit.” *Lexion Med., LLC v. Northgate Techs., Inc.*, 641 F.3d 1352, 1358 (Fed. Cir. 2011). The Fourth Circuit reviews the grant of summary judgment *de novo*. *Nader v. Blair*, 549 F.3d 953, 958 (4th Cir. 2008). Summary judgment is appropriate when there is “no genuine issue of material fact and the movant is entitled to judgment as a matter of law.” Fed. R. Civ. P. 56(a). It is the moving party’s burden to show it is entitled to judgment as a matter of law, and the non-moving party’s burden to “demonstrate that a triable issue of fact exists; he may not rest upon mere allegations or denials. A mere scintilla of evidence supporting the case is insufficient.” *Shaw v. Stroud*, 13 F.3d 791, 798 (4th Cir. 1994) (citation omitted). In evaluating a motion for summary judgment, we view all evidence and draw all reasonable inferences from the evidence in a light most favorable to the non-moving party. *Nader*, 549 F.3d at 958. “Where the record taken as a whole could not lead a rational trier of fact to find for the non-moving party, there is no ‘genuine issue for trial.’” *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986) (quoting *First Nat’l Bank of Ariz. v. Cities Serv. Co.*, 391 U.S. 253, 289 (1968)).

An issued patent is presumed valid. 35 U.S.C. § 282. “[I]f a patentee’s invention has been made by another, prior inventor who has not abandoned, suppressed, or concealed the invention, [35 U.S.C. § 102(g)] will invalidate that patent.” *Apotex USA, Inc. v. Merck & Co., Inc.*, 254 F.3d 1031, 1035 (Fed. Cir. 2001). Under § 102(g), on a motion for summary judgment, a challenger of a patent must prove “by clear and convincing evidence that ‘the invention was made in this country by another inventor.’” *Id.* at 1037 (quoting 35 U.S.C. § 102(g)). Then, the burden shifts “to the patentee to produce evidence sufficient to create a genuine issue of material fact as to whether the prior inventor has suppressed or concealed the invention.” *Id.* Finally, the burden shifts again to the challenger who “must rebut any alleged suppression or concealment with clear and convincing evidence to the contrary.” *Id.* at 1038.

I. Inventorship

Under § 102(g) a patent may be invalidated if “the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it.” 35 U.S.C. § 102(g). This section “operates to ensure that a patent is awarded only to the ‘first’ inventor in law.” *Apotex*, 254 F.3d at 1035. “[A] challenger . . . has two ways to prove that it was the prior inventor: (1) it reduced its invention to practice first . . . or (2) it was the first party to conceive of the invention and then exercised reasonable diligence in reducing that invention to practice.” *Mycogen Plant Sci., Inc. v. Monsanto Co.*, 243 F.3d 1316, 1332 (Fed. Cir. 2001).

Fox argues that Cree failed to prove that it invented a process for making low defect SiC wafers because it did not provide proof that it did, or could, duplicate the process used to make the Kyoto Wafer. Fox avers that

“[i]mplicit in the ‘conception’ requirement of inventorship is that the inventor must have conceived of something definite enough to be repeated, and that this conception is actually repeatable by those skilled in the art without undue experimentation.” Fox’s Opening Br. 41.

However, Cree needs only prove either that it reduced its invention to practice first *or* that it conceived of the invention first and was diligent in reducing it to practice. *Mycogen*, 243 F.3d at 1332. An alleged prior inventor would need to prove conception only if the alleged prior inventor had not successfully reduced the invention to practice before the critical date of the patent-at-issue (May 4, 2000).³ Since Cree reduced the invention to practice in 1995, *Fox Group*, 819 F. Supp. 2d at 532, it does not need to prove conception. Reduction to practice and conception are separate and distinct concepts and tests; we will not combine them.

The test for establishing reduction to practice requires that “the prior inventor must have (1) constructed an embodiment or performed a process that met all the claim limitations and (2) determined that the invention would work for its intended purpose.” *Teva Pharm. Indus. Ltd. v. AstraZeneca Pharms. LP & IPR Pharms., Inc.*, 661 F.3d 1378, 1383 (Fed. Cir. 2011). Cree met both prongs to establish reduction to practice. It developed the Kyoto Wafer, a SiC wafer that met all three defect density

³ To show conception a prior “inventor must be able to ‘describe his invention with particularity.’ [Burroughs Wellcome Co. v. Barr Labs., Inc., 40 F.3d 1223, 1228 (Fed. Cir. 1994).] This requires both (1) the idea of the invention’s structure and (2) possession of an operative method of making it.” *Invitrogen Corp. v. Clontech Labs, Inc.*, 429 F.3d 1052, 1063 (Fed. Cir. 2005). Cree would also meet the requirements of prior conception since it had an embodiment of the claimed product prior to Fox.

limitations of claims 1 and 19 of the '130 patent. *Fox Group*, 819 F. Supp. 2d at 532. Fox does not dispute that in 1995 Cree grew the Kyoto Wafer, which met all three of the defect density limitations of claims 1 and 19 of the '130 patent. Cree presented the results at the Kyoto Conference, describing the defect reduction achieved as a "breakthrough." *Id.* at 534.

Fox argues that the district court "improperly focused on a generalized purpose of making 'low defect' SiC, rather than on the claimed purpose of making SiC wafers that met three specific, measurable, and repeatable defect densities." Fox's Opening Br. 46. However, case law shows that the prior inventor does not need to "establish that he recognized the invention in the same terms as those recited" in the patent claims. *Dow Chem. Co. v. Astro-Valcour, Inc.*, 267 F.3d 1334, 1341 (Fed. Cir. 2001).

Fox argues that Cree failed to prove it had reduced the invention to practice before 1997. Fox contends that Cree admitted it had not invented a repeatable process, quoting the 1996 article, which states "we are working on process repeatability issues that will result in consistent production of wafers of equal or better quality." JA2127. However, Fox does not support its contention that Cree must prove repeatability to prove it had reduced the invention to practice. Furthermore, considering Cree's statement within the context of the article, Cree never said that it could not make another SiC boule that met the claim limitations of the '130 patent. Rather, Cree was describing the Kyoto Wafer which had very low micropipe density and describing plans to continue to reduce defects and grow even better quality wafers in the future. Cree proved that it had reduced the invention to practice; there is no requirement for it to have done so repeatedly, and therefore no genuine issue of material fact exists as to this issue.

“Cree appreciated in 1995 that its newly grown SiC material met uniquely low defect density thresholds, and said appreciation was based on ‘objective evidence [that] corroborate[s]’ Cree’s public comments concerning that quality.” *Fox Group*, 819 F. Supp. 2d at 534 (quoting *Invitrogen*, 429 F.3d at 1065) (brackets in original). There is no genuine issue whether Cree reduced the invention to practice prior to Fox’s critical date.

II. Abandonment, Suppression, or Concealment

There were two ways for Fox to produce evidence sufficient to create a genuine issue of material fact of abandonment, suppression, or concealment. *Dow*, 267 F.3d at 1342. The first way, that the prior inventor actively and intentionally suppressed or concealed, has not been raised before this court. *Id.* Rather, Fox disputes the sufficiency of Cree’s public disclosures, contending that abandonment, suppression, or concealment may be inferred from the inventor’s “unreasonable delay in making the invention publicly known.” *Id.*

There are numerous ways to support an inference of abandonment, suppression, or concealment, such as “[t]he failure to file a patent application, to describe the invention in a published document, or to use the invention publicly, within a reasonable time after first making the invention” *Id.* (citations omitted). Fox cites to the testimony of one of the Cree inventors, Dr. Calvin Carter, stating that a certain amount of nondisclosure was company policy. Fox argues that since Cree (1) did not file a patent application for its Kyoto Wafer, (2) did not present proof of commercialization that would allow for reverse-engineering, and (3) did not otherwise provide adequate disclosure because it failed to reveal the details of the growth conditions under which boule G0259 was made, Cree suppressed or concealed its invention.

However, our case law establishes that “although § 102(g) prior art must be somehow made available to the public in order to defeat another patent, a § 102(g) prior inventor is under no obligation to file a patent application.” *Apotex*, 254 F.3d at 1039. Commercialization has been relied upon as *another* way to prove public disclosure. *See e.g.*, *Dow*, 267 F.3d at 1343 (“Here, [the prior inventor’s] public disclosure of its . . . invention occurred through commercialization.”); *Checkpoint Sys. Inc. v. U.S. Int’l Trade Comm’n*, 54 F.3d 756, 762 (Fed. Cir. 1995) (“In cases in which an invention is disclosed to the public by commercialization . . .”). Filing a patent application and commercializing a product are only two convenient ways of proving an invention has been disclosed to the public. There are other ways to prove public disclosure including, e.g., the use of a printed publications as prior art under 35 U.S.C. §§ 102(a), (b).⁴

⁴ In *International Glass*, our predecessor court held that the prior invention was deemed abandoned, suppressed, or concealed, because although Sciaronni’s personal notebook records were kept of his method for polishing gem stones, the records were never submitted to their employer’s patent counsel or supervisory personnel for further evaluation, there was no evidence that the method was used by the company to make a finished product, the method was never described in any document or report, and no knowledge of the method was ever disseminated outside of the company. *Int’l Glass Co., Inc. v. United States*, 408 F.2d 395, 402-04 (Ct. Cl. 1969). The court’s analysis is instructive here because Cree took all of the steps the court mentioned Sciaronni had failed to take. In particular, Cree sent samples of its boule for testing by Dr. Dudley, an outside evaluator, the product itself (though not the process used to make it) was described in a published paper, and knowledge of the product was disseminated outside of the company in the Kyoto presentation.

Fox claims that public use or descriptions in a published document must be enabling, given the policy and purpose of the patent system to enrich the art by disclosing how to make the invention. Fox quotes extensively from our case law to support its argument that the prior art must be enabling:

Early public disclosure is a linchpin of the patent system. As between a prior inventor who benefits from a process by selling its product but suppresses, conceals, or otherwise keeps the process from the public, and a later inventor who promptly files a patent application from which the public will gain a disclosure of the process, the law favors the latter.

W.L. Gore & Assocs., Inc. v. Garlock, Inc., 721 F.2d 1540, 1550 (Fed. Cir. 1983) (citations omitted).

A principal purpose of § 102(g) is to ensure that a patent is awarded to a first inventor. However, it also encourages prompt public disclosure of an invention by penalizing the unexcused delay or failure of a first inventor to share the benefit of the knowledge of the invention with the public after the invention has been completed.

Checkpoint Sys., 54 F.3d at 761 (citations omitted). Fox contends that the presentation and publication about the Kyoto Wafer are not enough to enable one skilled in the art to make the invention, because Cree never disclosed how it got its results.

As Fox effectively admits, all of the cases it cites to support its assertion that § 102(g) requires an enabling disclosure are process claims. The '130 patent is a patent directed to a product, a silicon wafer comprising SiC material with specific low defect densities, but Fox argues

that any distinction between product and process claims is irrelevant. We disagree.

The purpose of § 102(g) is to bar an inventor from receiving a patent on an invention that has already been invented and was not abandoned, suppressed, or concealed. *Apotex*, 254 F.3d at 1038-39. If the patent claimed a process, then a prior inventor would have to prove prior invention of the process which had not been abandoned, suppressed, or concealed, to invalidate the patent under § 102(g). “Cree promptly and publicly disclosed its findings concerning the low defect properties of the SiC material from which the [Kyoto Wafer] was cut through a presentation at the 1995 International Conference and a published paper on the subject.” *Fox Group*, 819 F. Supp. 2d at 535. Accordingly, Cree promptly made its invention, a SiC material with low defect densities, known to the public. Fox has not produced sufficient evidence raising any genuine issues of material fact to show that Cree suppressed or concealed its invention.

Because Cree has produced clear and convincing evidence that it had the low density SiC crystal prior to Fox’s date of invention, and Fox has not produced sufficient evidence to show or raise genuine issues that Cree abandoned, suppressed, or concealed the invention, we find claims 1 and 19 of the ’130 patent invalid under § 102(g)(2). Accordingly, we affirm the invalidity decision of the district court as to claims 1 and 19 of the ’130 patent.

III. Invalidity of the Unasserted Claims

Cree sought summary judgment of invalidity with respect to all claims of the patents-in-suit. Upon a finding that claims 1 and 19 of the ’130 patent were invalid under § 102(g), the district court granted Cree’s summary judgment motion on its counterclaim seeking a declaration

that the entire '130 patent is invalid. On appeal, Fox asserts that there was no justiciable controversy to support Cree's counterclaim for invalidity on the remaining claims of the '130 patent, and thus the district court's order should be vacated with respect to those remaining claims.

In patent cases, “the existence of a case or controversy must be evaluated on a claim-by-claim basis.” *Jervis B. Webb Co. v. So. Sys., Inc.*, 742 F.2d 1388, 1399 (Fed. Cir. 1984) (citations omitted). “[J]urisdiction must exist at all stages of review, not merely at the time the complaint [was] filed, . . . a counterclaimant must show a continuing case or controversy with respect to withdrawn or otherwise unasserted claims.” *Streck, Inc. v. Research & Diagnostic Sys., Inc.*, 665 F.3d 1269, 1282-83 (Fed. Cir. 2012) (bracket in original) (quotations and citations omitted).

In *Scanner Technologies* the patent holder filed an infringement suit and the defendants counterclaimed seeking declaratory judgment on “each of the claims” of the two asserted patents. *Scanner Techs. Corp. v. ICOS Vision Sys. Corp. N.V.*, 528 F.3d 1365, 1383 (Fed. Cir. 2008). This court upheld the district court’s judgment invalidating all of the claims because the parties had stipulated that the case was to be tried on one representative claim. *Id.* at 1383-84. In *Streck*, this court distinguished *Scanner Technologies* because in *Scanner Technologies* the “patentee never affirmatively disclaimed its allegations of infringement as to the other claims, here . . . the patentee narrowed the scope of its claims at the start of litigation pursuant to the local patent rules and did so even further before any dispositive rulings by the court.” *Streck*, 665 F.3d at 1283.

Here, as in *Streck*, Fox’s Complaint alleged infringement of “one or more claims,” but Fox subsequently

narrowed the scope of its asserted claims before the court ruled on the parties' summary judgment motions. *Id.* at 1284. In its Complaint, Fox stated that Cree "practice[d] the invention of the '130 patent and, thus, infringe[d] one or more claims of the '130 patent." JA4906. Cree argues that there was a continuing case or controversy with respect to the unasserted claims because in Fox's responses to Cree's first set of interrogatories, dated December 23, 2010, it asserted infringement of claims 1, 7, 13, and 19 of the '130 patent, and never assured Cree that it would not assert them. The district court stated Fox only alleged infringement of claims 1 and 19 of the '130 patent. *Fox Group*, 819 F. Supp. 2d at 527. The district court further explained that although terms and phrases that were the subject of the claim construction order were also found in claims 7 and 13 of the '130 patent, "Fox has never indicated that Cree infringes those claims. Rather, Fox avers that Cree's products contain a density of dislocations below 10,000, the dislocation threshold found only in claims 1 and 19." *Id.* at 527 n.5.⁵

Considering all of the circumstances discussed above we affirm the district court's finding that only claims 1 and 19 of the '130 patent were asserted. However, "unlike the situation in *Scanner Technologies*, where all of the claims were at issue and were never withdrawn or altered

⁵ The district court supported its determination with the following: "See, e.g., Compl. ¶ 38 (referencing a chart 'depicting that Cree is infringing at least claim 1 of the '130 patent.); Fox's Supplemental Br. In Opp. to Mot. for Summ. J. 2 n. 2, ECF No. 522 (claiming that Fox's expert's 'opinions establish that the surface of an axial region of each category of Cree's as-grown wafers . . . has a density of dislocations of less than 10⁴ per cm²'); *id.* at 5-6, 14; *see also id.* at 11 ("The issue of infringement has narrowed to the density of dislocations limitation.")."*Fox Group*, 819 F. Supp. 2d at 527 n.5.

by either party, here, both parties were on notice” that only claims 1 and 19 were at issue, and they knew which claims were at issue before the district court ruled on the parties’ summary judgment motions. *Streck*, 665 F.3d at 1284. There was no case or controversy with respect to the unasserted claims at the time of the summary judgment motions; therefore the district court did not have jurisdiction over the unasserted claims. *Id.* Accordingly, we vacate the district court’s declaration that the entire ’130 patent is invalid,⁶ but uphold the district court’s finding of invalidity of claims 1 and 19 under § 102(g). *See id.*; *see also Dow*, 267 F.3d at 1344 (finding only the claims at issue invalid under § 102(g)).

CONCLUSION

For the above mentioned reasons, we vacate the district court’s decision that the entire ’130 patent is invalid, but uphold the district court’s finding of invalidity of claims 1 and 19 under § 102(g).

AFFIRMED-IN-PART AND VACATED-IN-PART

⁶ Because we uphold the district court’s determination of invalidity as to claims 1 and 19 of the ’130 patent, this determination does not impact the district court’s dismissal of Fox’s claim for infringement of the ’130 patent.

United States Court of Appeals for the Federal Circuit

THE FOX GROUP, INC.,
Plaintiff-Appellant,

v.

CREE, INC.,
Defendant-Appellee.

2011-1576

Appeal from the United States District Court for the Eastern District of Virginia in case no. 10-CV-0314, Judge Rebecca Beach Smith.

O'MALLEY, *Circuit Judge*, concurring-in-part, dissenting-in-part.

I agree that Cree, Inc. ("Cree") reduced its invention to practice before Fox Group, Inc. ("Fox") did so. Although my reasons for reaching this conclusion differ somewhat from those articulated by the majority, I agree that, in 1995, Cree grew a silicon carbide ("SiC") material that met uniquely low defect density thresholds and appreciated the qualities the material possessed. These facts are sufficient, in my view, to establish Cree's prior reduction to practice.¹ Despite this threshold agreement with the

¹ I also agree that, because Cree only sought judgment declaring claims 1 and 19 of U.S. Patent No.

majority's reasoning, however, I dissent from the judgment the majority enters; I do not agree that the record supports the conclusion that, as a matter of law, Cree neither abandoned, suppressed, nor concealed its invention within the meaning of § 102(g).

One is entitled to a patent unless, "before such person's invention thereof, the invention was made in this country by another inventor who had not abandoned, suppressed, or concealed it." 35 U.S.C. § 102(g)(2). Although there is "no explicit disclosure requirement in § 102(g)," we have held that "the spirit and policy of the patent laws encourage an inventor to take steps to ensure that 'the public has gained knowledge of the invention which will insure its preservation in the public domain' or else run the risk of being dominated by the patent of another." *Apotex USA, Inc. v. Merck & Co.*, 254 F.3d 1031, 1038 (Fed. Cir. 2001) (quoting *Palmer v. Dudzik*, 481 F.2d 1377, 1387 (C.C.P.A. 1973)). As the majority explains, once prior invention is established by clear and convincing evidence, "the burden of production shifts to the patentee to produce evidence sufficient to create a genuine issue of material fact as to whether the prior inventor abandoned, suppressed, or concealed the invention." *Dow Chem. Co. v. Astro-Valcour, Inc.*, 267 F.3d 1334, 1339 (Fed. Cir. 2001) (citing *Apotex*, 254 F.3d at 1037). If the patentee meets this burden of production, "the challenger may rebut the evidence of abandonment, suppression, or concealment, with clear and convincing evidence to the contrary." *Id.* (citing *Apotex*, 254 F.3d at 1037-38).

6,562,130 ("the '130 Patent") invalid under 35 U.S.C. § 102(g), the district court erred in holding the *entire* patent invalid. Indeed, the correctness of that proposition is so clear as to need no further comment.

Because I agree that Cree established prior invention by clear and convincing evidence, the relevant questions are: (1) whether Fox produced evidence sufficient to create a genuine issue that Cree nonetheless abandoned, suppressed, or concealed that invention, and, if so, (2) whether Cree rebutted Fox’s evidence of abandonment, suppression, or concealment with clear and convincing evidence. The majority agrees with the district court that Fox failed to present any evidence that Cree abandoned, suppressed, or concealed the invention. I disagree. As discussed below, summary judgment was inappropriate because: (1) Fox presented evidence of both direct and inferential abandonment, suppression, or concealment; and (2) Cree’s written publication – a 1996 article entitled “Recent progress in SiC crystal growth,” which was published in the Kyoto Conference journal (“the Kyoto Article”) – was insufficient standing alone to rebut Fox’s evidence.

I. Fox Presented Evidence of Abandonment, Suppression, or Concealment

It is well-established that there are two types of abandonment, suppression, or concealment. The first is where the inventor deliberately suppresses or conceals his invention from the public. *Fujikawa v. Wattanasin*, 93 F.3d 1559, 1567 (Fed. Cir. 1996). The second type occurs when abandonment, suppression, or concealment “may be inferred based upon the prior inventor’s unreasonable delay in making the invention publicly known.” *Dow Chem.*, 267 F.3d at 1342 (citation omitted). This court has said that the “failure to file a patent application, to describe the invention in a published document, or to use the invention publicly, within a reasonable time after first making the invention may constitute abandonment, suppression, or concealment.” *Id.* (internal citations omitted).

On appeal, Fox argues that it submitted sufficient evidence to satisfy its burden of production as to both intentional and inferential abandonment, suppression, and concealment. The majority disagrees and accepts the district court's conclusion that Fox sought only to show an *inference* of abandonment, suppression, or concealment based on unreasonable delay. *See Fox Group, Inc. v. Cree, Inc.*, 819 F. Supp. 2d 524, 535 (E.D. Va. 2011) ("Fox does not offer evidence, let alone contend that Cree 'intentionally delayed [disclosure] in order to prolong the period during which the invention is maintained in secret.'") (citation omitted).

As Fox's supplemental briefing to the district court reveals, however, Fox did *not* limit its arguments to inferential abandonment. Instead, Fox argued broadly that Cree had a policy of concealing its production methods and that this policy, "in conjunction with Cree's choice not to reveal the subject matter of the invention in its [Kyoto Article] and not to enable its competitors how to make it, establish that Cree suppressed or concealed the invention." J.A. 4170. In support of this position, Fox pointed to deposition testimony from one of Cree's inventors – Dr. Calvin Carter – regarding the company's policy to exclude all details as to how to replicate discoveries in any publications regarding them. Fox further argued that, even if Cree made and appreciated its invention in 1995, it delayed nine years, until 2004, before commercializing anything that resembled the Kyoto wafer. In other words, Fox argued both that Cree: (1) "made a choice not to disclose the subject matter of the invention or enable the public how to make it"; and (2) unreasonably delayed placing the invention in the public domain. J.A. 4173-74. Given these distinct assertions, although the district court interpreted Fox's arguments to relate solely to the second type of proof, Fox presented evidence suffi-

cient to encompass both intentional and inferential abandonment, suppression, or concealment.

Fox presented direct evidence that Cree: (1) deliberately concealed its production methods; (2) did not file a patent application relating to the low-defect SiC wafer it created (“the Kyoto wafer”); and (3) failed to publicly use or commercialize the Kyoto wafer in a manner that would have allowed reverse-engineering. With respect to abandonment, Fox argued that Cree had no proof that the process it used to create the Kyoto wafer was ever used again, or that Cree even understood what that process was. Specifically, Fox pointed to deposition testimony which, according to Fox, revealed that “Cree did not pursue further crystal growth using the same recipe and reactor in an attempt to reproduce the G0259-03 crystal.” J.A. 4170. This evidence, taken as a whole, is sufficient to create a genuine issue that Cree abandoned, suppressed, or concealed its invention, particularly since the standard for summary judgment requires that it be viewed in the light most favorable to Fox.

II. Cree Failed to Rebut Fox’s Evidence of Abandonment, Suppression, or Concealment

Because Fox presented evidence creating genuine issues of material fact as to abandonment, suppression, or concealment, the burden shifted to Cree to rebut that showing with clear and convincing evidence. A first inventor can avoid a determination of abandonment, suppression, or concealment by showing that “he or she marketed or sold a commercial embodiment of the invention or described the invention in a publicly disseminated document.” *Checkpoint Sys., Inc. v. Int’l Trade Comm’n*, 54 F.3d 756, 762 (Fed. Cir. 1995).

Here, Cree’s only rebuttal argument was that it disclosed the Kyoto wafer, together with an x-ray topograph

and a description of its low-defect nature, at the Kyoto Presentation and in the subsequent Kyoto Article. Based on this evidence alone, the district court found that it could not draw an inference of abandonment, suppression, or concealment. *Fox Group*, 819 F. Supp. 2d at 536 (“[T]here is no genuine issue that Cree contemporaneously disclosed its invention in a presentation and paper at the 1995 International Conference, and that said paper was subsequently published.”). Because it publicly disclosed the *fact* of the invention, albeit in limited fashion, the district court found “that Cree did not delay in ‘bringing knowledge of the invention to the public’ and that it was “of no moment that Cree did not market its public invention in its commercial products for nine years.” *Id.* In short, the district court, and now the majority here, find that the same evidence which established Cree’s prior reduction to practice was sufficient to *prohibit* a finding of abandonment, suppression, or concealment.

Fox relies on *Apotex* for the proposition that Cree’s failure to either explain to the public how to make its invention or to provide the public with some mechanism for making that determination on its own constitutes concealment.² In *Apotex*, which involved a claimed proc-

² Specifically, Fox emphasizes language in *Apotex* where this court discussed the policy in favor of public disclosure of inventions:

[T]he spirit and policy of the patent laws encourage an inventor to take steps to ensure that “the public has gained knowledge of the invention which will insure its preservation in the public domain” or else run the risk of being dominated by the patent of another. *Palmer v. Dudzik*, 481 F.2d 1377, 1387 (C.C.P.A. 1973) Absent a satisfactory explanation for the delay or the presence of other mitigating facts, a prior invention will therefore be deemed suppressed or concealed

ess of manufacturing high blood pressure tablets, the court found that the prior inventor “took no steps to make the invention publicly known for nearly five years,” and that this delay gave rise to an inference that it suppressed or concealed its invention. 254 F.3d at 1039. The court concluded, however, that the prior inventor successfully rebutted this inference by, among other things, selling the tablets commercially, disclosing the ingredients used to manufacture the tablets in a publication, and providing a step-by-step description of the process through testimony at a Canadian trial. *Id.* at 1040. In reaching this conclusion, we noted that, if it were clear that the process “could be reverse-engineered by one of ordinary skill through an inspection” of the product, the patentee “could not benefit from the inference of suppression or concealment because [the prior inventor] could not be said to have delayed in making the benefits of its invention known to the public.” *Id.* at 1039, n.3 (citation omitted).

While citing to it in passing, the majority completely ignores *Apotex*, failing to address either its policy concerns or the analysis employed. It is difficult to ignore the fact, however, that *Apotex* makes clear that a prior inventor must show that the public was clearly given the benefit of an invention, via reverse-engineering, a detailed disclosure, or otherwise, if it wants to rely on § 102(g) to invalidate a patent. Despite the majority’s finding to the contrary, simply disclosing the existence of the product,

within the meaning of § 102(g) “if, within a reasonable time after completion, no steps are taken to make the invention publicly known.” [*Int’l Glass Co., Inc. v. United States*, 408 F.2d 395, 403 (Ct. Cl. 1969)].

Apotex, 254 F.3d at 1038-39.

without more, is insufficient to make an invention publicly known. There must be something more.

For example, in *Dow Chemical*, this court found that commercialization of a product was sufficient to rebut a charge of abandonment, suppression, or concealment. In *Dow*, the invention related to plastic foam products. There, a prior inventor, AVI, publicly disclosed its invention of the foam product to the public through commercialization. 267 F.3d at 1343. The patentee argued that AVI had abandoned, suppressed, or concealed its prior invention by delaying public disclosure. Although this court agreed that “unreasonable delay in bringing knowledge of the invention to the public may raise an inference of suppression or concealment,” it found that there was no such delay because AVI took reasonable steps towards commercialization after its initial discovery. *Id.* at 1342-43. Specifically, we found that, “during the 30 months between first making the isobutane-blown foam and selling the foam, AVI actively and continuously took steps towards the commercialization . . . including the procurement of financing to build a new production plant and the attention to safety considerations associated with using isobutane as a blowing agent.” *Id.* at 1343. Because the undisputed evidence showed that AVI made reasonable efforts to bring the invention to the public, the court concluded that Dow did not show suppression or concealment.

Cree cites *Dow* for the proposition that, where the claimed invention is a product, the prior inventor need only disclose the product itself to rebut abandonment, suppression, or concealment – it need not disclose the process used to make it; indeed, it need not even understand the process used to make it. According to Cree, *Dow* supports its position because the process for making the foam was never disclosed. The fact remains, however,

that in *Dow*, there was clear evidence that the product was made publicly available through commercialization.

The majority does not discuss *Dow* in any detail, perhaps recognizing that it is distinguishable from the instant case where Cree has not, at this stage, shown any evidence of commercialization before 2004.³ And, unlike in *Dow*, there is no evidence in the record as to steps Cree took to commercialize its product during the nine year period following invention. Instead, the evidence at this stage establishes only that the Cree inventors gave a presentation and published a non-enabling article. Although Cree alleges that it continued its research efforts to further improve its SiC material, there is no supporting evidence of that fact in the record.

Neither Cree nor the majority point to any case law where § 102(g) was used to invalidate a patent even though the prior inventor did not commercialize the product, make it available to the public so that reverse-engineering was possible, or provide some other detailed disclosure giving the public the benefit of the invention. Although the cases on which Fox relies for its enablement requirement do involve process claims – not a product claim as we have here – there are no cases before now where we have said that a non-enabling disclosure, by

³ When asked at oral argument whether Cree conceded that it took nine years for commercialization, counsel responded: “I don’t concede that in this record. In this record we did not pursue a commercialization path to show that there wasn’t abandonment, suppression, or concealment.” Oral Argument at 27:47, *available at* <http://www.cafc.uscourts.gov/oral-argument-recordings/2011-1576/all>. At this stage of the proceedings, therefore, it is undisputed that the record is devoid of any evidence of commercialization prior to 2004.

itself, is sufficient to rebut evidence of abandonment, suppression, or concealment.

Because Cree made the fact of its invention known to the public, the majority, like the district court before it, concludes that Fox can never establish abandonment, suppression, or concealment. Under the majority's approach, an inventor could publicly announce that it made a product, with no explanation as to how it did so, and then hide it away in a closet indefinitely. As long as the inventor describes a product in general terms, the inventor cannot, according to the majority, be accused of abandoning, suppressing, or concealing the invention.

The majority's approach cannot be the law. If a prior inventor could disclose the mere existence of a product and take no further action for nine years, the concept of abandonment, suppression, or concealment would be rendered meaningless. Consistent with our prior case law, where there is no enabling written disclosure, there must be evidence that the prior inventor timely made its invention available to the public in some other way – *e.g.*, through public use, commercialization, or filing a patent application claiming the invention. Such a requirement is consistent with § 102(g)'s general goal of giving the public the benefit of the invention. *See Checkpoint*, 54 F.3d at 761 (Section 102(g) “encourages prompt public disclosure of an invention by penalizing the unexcused delay or failure of a first inventor to share the ‘benefit of the knowledge of [the] invention’ with the public after the invention has been completed.” (citation omitted)).

Here, the record is devoid of any rebuttal evidence beyond the Kyoto Article, which did little more than proclaim that Cree “recently had a breakthrough that has dramatically reduced” micropipe density. J.A. 2127. The Article included an x-ray topograph and stated that one

wafer contained “a total of 25 micropipes, yielding a density of 3.5 cm^{-2} ” while some other wafers had a “total line defect density of about 1000 cm^{-2} .” *Id.* The Kyoto Article did not refer to the three defect densities claimed in the ’130 Patent and did not reveal Cree’s “experimental methods” or its “specific crystal growth conditions.” Appellant Br. 14. These deficiencies, coupled with evidence that Cree intentionally did not tell the public how to make the wafer it described, was not able to repeat its invention, and did not engage in commercialization of the wafer for nine years, support Fox’s position that Cree abandoned, suppressed, or concealed its invention.

By relying solely on the Kyoto Article, Cree has not, as of yet, satisfied its burden of rebutting Fox’s evidence. Because there are underlying facts that are both material and genuinely disputed, and because the district court erred in resolving those disputes in favor of the moving party, I would remand this case for further factual development on the question of whether Cree abandoned, suppressed, or concealed its invention within the meaning of § 102(g).

III. Conclusion

For the foregoing reasons, although I agree with the majority that Cree established prior inventorship, I believe there are genuine issues of material fact precluding summary judgment in Cree’s favor under § 102(g). Accordingly, I must respectfully dissent from the judgment the majority reaches. I would reverse and remand for trial.