IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

ROCKWELL TECHNOLOGIES, LLC,	)	
	)	
Plaintiff,	)	
	)	
v.	)	C.A. No. 00-589 GMS
	)	
SPECTRA-PHYSICS LASERS, INC. and OPTO POWER CORPORATION,	)	
	)	
	)	
Defendants.	)	

MEMORANDUM AND ORDER

I. INTRODUCTION

The plaintiff, Rockwell Technologies, LLC ("Rockwell") filed the above-captioned action against Spectra-Physics Lasers, Inc. ("Spectra") and Opto Power Corporation ("Opto") on June 16, 2000. In its complaint, Rockwell alleges that Spectra and Opto are infringing U.S. Patent No. 4,368,098 ("the '098 patent").

Presently before the court is Rockwell's motion for summary judgment. In that motion, Rockwell asks the court to find that Opto is literally infringing claims 19, 30, 50, 56 and 72 of the '098 patent. For the reasons that follow, the court will deny this motion.

II. STANDARD OF REVIEW

The court may grant summary judgment "if the pleadings, depositions, answers to interrogatories, and admissions on file, together with the affidavits, if any, show that there is no genuine issue as to any material fact and that the moving party is entitled to judgment as a matter of law." Fed. R. Civ. P. 56(c); *see also Boyle v. County of Allegheny, Pennsylvania*, 139 F.3d 386, 392 (3d Cir. 1998). Thus, the court may grant summary judgment only if the moving party shows that there are no genuine issues of material fact that would permit a reasonable jury to find for the

non-moving party. *See Boyle*, 139 F.3d at 392. A fact is material if it might affect the outcome of the suit. *Id*. (citing *Anderson v. Liberty Lobby*, *Inc*., 477 U.S. 242, 247-248 (1986)). An issue is genuine if a reasonable jury could possibly find in favor of the non-moving party with regard to that issue. *Id*. In deciding the motion, the court must construe all facts and inferences in the light most favorable to the non-moving party. *Id*.; *see also Assaf v. Fields*, 178 F.3d 170, 173-174 (3d Cir. 1999).

Whether an accused device or method infringes a claim either literally or under the doctrine of equivalents is a question of fact. *See Caterpillar Inc. v. Deere & Co.*, 224 F.3d 1374, 1379 (Fed. Cir. 2000). Accordingly, "a motion for summary judgment of infringement or noninfringement should be approached with a care proportional to the likelihood of its being inappropriate." *Ampex Corp. v. Mitsubishi Electric Corp*., 966 F. Supp. 263, 273 (D. Del. 1997) (quoting *D.M.I., Inc. v. Deere & Co.*, 755 F.2d 1570, 1573 (Fed. Cir. 1985)); *see also Biodex Corp. v. Chattanooga Corp.*, 20 U.S.P.Q.2d 1517 (D. Del. 1991) (stating that the ultimate determination of infringement is a fact issue "and a motion for summary judgment on that issue should be approached with great care by the district court.")

With these standards in mind, the court will describe the facts that led to the motion presently before the court.

III. BACKGROUND

The '098 patent relates to a process for forming Group III-V semiconductors. Specifically, the claims of the '098 patent recite a process for forming "an epitaxial film of Group III-V semiconductor disposed on a single crystal substrate." A Group III-V semiconductor film can be grown epitaxially on a single crystal substrate by a variety of techniques. One such technique is

called Vapor-Phase Epitaxy ("VPE"). In the VPE technique, reactant gases containing the Group III and Group V materials are combined at elevated temperatures to cause a chemical interaction, resulting in the deposit of the Group III and Group V materials on the substrate.

The '098 patent describes and claims VPE processes that have certain steps. A reactant gas containing the Group III element and a reactant gas containing the Group V element are combined in a reaction chamber.[1] The form of VPE disclosed in the '098 patent has become commonly known as metalorganic chemical vapor deposition ("MOCVD").

One type of reactor used to carry out MOCVD is a cold-wall reactor. In a cold-wall reactor, the substrate is supported by a pedestal, which also acts as a susceptor. The pedestal/susceptor is the primary origin of heat energy in the reaction chamber. In the '098 patent specification, the pedestal is the structure that supports the substrate and operates as a susceptor to heat the substrate. The pedestal/susceptor is made of a radiation-absorbing material such as carbon. In contrast, the walls of the reaction chamber in a cold-wall reactor are typically made of quartz which is largely transparent to the electromagnetic radiation. The reaction chamber walls in a cold-wall reactor, however, may be indirectly heated by heat radiating from the hot pedestal/susceptor, but will remain cooler than the pedestal/susceptor and the substrate the pedestal/susceptor supports.

During the time period between June 19, 1994 and January 11, 2000, Opto used four reactors to manufacture Group III-V semiconductors: two Cambridge MR-190 reactors, one Aixtron 2400 reactor, and one Aixtron 2600G3 reactor. Rockwell alleges that each of these four reactors infringes the '098 patent.

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[1] The reaction chamber is the portion of the reactor where the gases react for deposition of the film on the substrate.

V. DISCUSSION

On September 18, 2001, the court issued a claim construction order in this case. That order defines a cold-wall reactor as being "one that heats the substrate (e.g. by rf heating) while the walls remain cooler than the substrate." The court further clarified that "the walls" are those portions of the reaction chamber other than the substrate/pedestal in contact with the reactant gases. Opto has admitted that its reactors literally meet each element of claims 19, 30, 50, 56, and 72, except with regard to the "cold-wall reactor" element.

Thus, on the present motion, the court must answer three questions in Rockwell's favor before it may grant summary judgment. First, the court must determine whether any material issue lingers with regard to what the pertinent structures are, i.e., whether the structure is a portion of the reactant chamber "in contact with reactant gases." For any such pertinent structure, the court must then determine whether there remains a material issue with regard to whether that structure is a substrate or part of the pedestal, and, therefore, not a wall. Finally, the court must determine whether there is a genuine issue of material fact as to whether the pertinent walls are cooler than the substrate.

A. Cambridge MR 190 Reactors[2]

Opto does not dispute that the outer bell jar of the Cambridge MR 190 is a wall of the reaction chamber that is cooler than the substrate. Opto argues, however, that its Cambridge reactors do not meet the cold-wall reactor limitation because the inner bell jar; the portion of the susceptor before the substrate; and the quartz dome are all walls of the reaction chamber that are not cooler

[2]At issue are two Cambridge MR-190 reactors. For purposes of this motion, they will be treated together.

than the substrate.

Opto points to two portions of the inner bell jar that it maintains are walls. The first portion is behind the susceptor and the second portion is downstream from the substrates. Rockwell argues, however, that these portions are not relevant to an infringement analysis because neither is a "portion of the reaction chamber . . . in contact with the reactant gases."

Opto's Rule 30(b)(6) witness, Dr. Xiaoguang He ("Dr. He") testified that the source gases do not flow between the susceptor and inner bell jar.[3] Dr. He further testified that, as to the space between the susceptor and inner bell jar, "I don't want any chemical to go behind it." Thus, Opto's 30(b)(6) witness was unequivocal that the reactant gases do not flow between the susceptor and the inner bell jar.

In its opposition, Opto seeks to clarify its own witness' testimony with an unsworn expert opinion suggesting that reactant gases are "capable" of flowing between the susceptor and inner bell jar. However, as the unsworn expert report does not comply with the requirements of Rule 56(e), it cannot be considered as competent evidence on a motion for summary judgment. *See Fowle v. C&C Cola*, 868 F.2d 59, 67 (3d Cir. 1989) (citing *Adickes v. S.H. Kress & Co.*, 398 U.S. 144 (1970)) (noting that an unsworn expert report is not competent evidence on a motion for summary judgment).[4]

In further opposition, Opto has also pointed to the Operations Manual for the MR-190. This

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[3]The source gases refer to the reactant gases.

[4]The court is mindful that this result turns on a technical point, however, Spectra and Opto had notice of this defect prior to the court's decision. Rockwell raised this issue in its reply brief. In the months that have passed since that time, Spectra's and Opto's counsel have not attempted to rectify this defect.

manual notes that a hydrogen sweep flows between the susceptor and the inner bell jar to prevent a build-up of process gas deposition on the inner bell jar and inner surface of the susceptor. *See* MR-190 Operations Manual at 45. This evidence is sufficient to raise a genuine issue of material fact with regard to whether the inner bell jar is "a portion of the reaction chamber . . . in contact with the reactant gases."

Because the court has found a genuine issue of material fact with regard to at least one portion of the MR-190 reactor, it declines to engage in an analysis of the remaining two portions of this reactor which are in dispute.

B. The Aixtron 2400

Opto further argues that the following three structures could be considered walls that are hotter than the substrate in the Aixtron 2400 reactor: (1) the molybdenum exhaust ring; (2) the lower quartz plate; and (3) the susceptor components.

With regard to the molybdenum exhaust ring, Rockwell points to Dr. He's deposition testimony that the reactant gases flow through the nozzle in the center of the reactor and then flow radially outward along the planetary disk and satellite disks to the substrates. After the reactant gases react and deposit on the substrate, the exhaust gases flow toward and out the molybdenum exhaust ring. Rockwell thus concludes that the reactant gases do not contact the exhaust ring as is required for it to be considered a wall. In opposition, however, Opto highlights the testimony of Dr. Juergensen, the developer of the Aixtron 2400 reactor, that the exhaust ring was one of the walls of the reaction chamber. Dr. Juergensen further testified that the molybdenum exhaust ring was kept at a temperature as hot as possible to avoid condensation of reactant gases on the surface of the exhaust ring. Based on this conflicting information, the court concludes that there is a genuine issue

of material fact with regard to the status of the exhaust ring.

As noted above, because the court finds that it cannot grant summary judgment on this reactor, it declines to engage in an analysis of the remaining disputed portions.

C. The Aixtron 2600[5]

Opto maintains, and Rockwell does not dispute, that the issues with regard to the Aixtron 2600 reactor and the Aixtron 2400 reactor are virtually identical. Specifically, the issues are whether the molybdenum exhaust ring, the lower quartz plate, and the planetary disk are walls. Thus, the court finds a genuine issue of material fact for the same reasons as stated above with regard to the Aixtron 2400 reactor.

V. CONCLUSION

Based on the evidence before it, the court concludes that there remain genuine issues of material fact with regard to each of the reactors at issue.

For these reasons, IT IS HEREBY ORDERED that:

1. Rockwell's motion for summary judgment that Opto Power Corporation infringes claims 19, 30, 50, 56 and 72 of the '098 patent (D.I. 192) is DENIED.

Date: April 8, 2002

Gregory M. Sleet
UNITED STATES DISTRICT JUDGE

[5]Opto has indicated that it does not believe the Aixtron 2600 is properly part of this lawsuit, but that it will take the appropriate steps by motion to exclude such evidence prior to trial. The court thus expresses no opinion on this issue at this time.