

The opinion in support of the decision being entered today was not written for publication in a law journal and is not binding precedent of the Board.

Paper No. 44

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte STEVEN C. QUAY

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Appeal No. 2000-0827  
Application 08/466,104

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ON BRIEF

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Before MARTIN, SCHAFER, and TORCZON, Administrative Patent Judges.

MARTIN, Administrative Patent Judge.

**DECISION ON APPEAL**

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 48-56, all of the pending claims, under the written description requirement of 35 U.S.C. § 112, first paragraph. We reverse.

**A. The claims**

The rejected independent claims read as follows:

48. Biocompatible ultrasound contrast media comprising a solution in which microbubbles of a gas are stabilized by human protein, the gas comprising perfluoropropane.

51. Biocompatible ultrasound contrast media comprising a solution in which microbubbles of a gas

are stabilized by human protein, the gas comprising perfluorobutane.

54. Biocompatible ultrasound contrast media comprising a solution in which microbubbles of a gas are stabilized by human protein, the gas comprising perfluoropentane.

As explained below, the examiner contends that the application as filed does not disclose contrast agents in which human protein is used to stabilize the three claimed gases.

**B. Appellant's disclosure**

The specification explains that

[t]his invention relates to agents that enhance the contrast in an ultrasound image generated for use in medical diagnosis. The contrast-enhancing media disclosed herein are comprised of extremely small gas bubbles which are present in a solution that is infused into the body during or just before an ultrasound image is generated.

Specification at 1, ll. 11-17. The invention is further described as directed to the selection of particular gases for forming free gas (i.e., unencapsulated) microbubbles:

This invention is also directed to a method for enhancing such images by selecting gases from which a collection of free gas microbubbles can be prepared that have novel and superior properties. These microbubbles, composed of the gases whose selection is enabled by the process of this invention, may be extremely small in size and yet survive in the bloodstream long enough to allow contrast-enhanced imaging of parts of the cardiovascular system, peripheral vascular system, and vital organs previously believed to be inaccessible to free gas microbubbles.

Id. at 1, ll. 17-28.

Under the heading "Techniques For Measuring Ultrasound Contrast-Enhancement Phenomena" (id. at 6), the specification discusses three main contrast-enhancing effects: backscatter (id. at 7-11); beam attenuation (id. at 11-13); and speed of sound differential (id. at 13). Of these three effects, "the marked increase in backscatter caused by free gas microbubbles is the most dramatic effect and contrast-enhancing agents that take advantage of this phenomenon would be the most desirable if the obstacle of their limited stability in solution could be overcome." Id. at 13, ll. 24-29.

Appellant has determined that the persistence of gas microbubbles in a solution can be ascertained by calculating the Q coefficient or value for the gas in accordance with Equation (7) at page 25 of the specification, which appears in slightly modified form in originally filed claim 1:

1. Contrast media for ultrasound image-enhancement comprising microbubbles of a biocompatible gas having a Q coefficient greater than 5 where

$$Q = 4.0 \times 10^{-7} \times \rho / C_s D$$

and  $\rho$  is the density of the gas ( $\text{Kgm}^{-3}$ ),  $C_s$  is the water solubility of the gas (M) and D is the diffusivity of the gas in solution ( $\text{cm}^3\text{sec}^{-1}$ ).

The Q coefficient is directly proportional to the persistence of the microbubbles. For example, if the Q coefficient for gas X is 10,000, a microbubble of gas X will survive 10,000 times longer in solution than will a microbubble of air (id. at 26, ll. 1-4).

Q coefficients greater than five are characterized as "especially promising" (id. at 35, ll. 1-2).

As explained in Equation (3) (id. at 23), which also appears in originally filed claim 14, the diffusivity D in the equations for Q is a function of the viscosity  $\eta$  of the solution and the molar volume  $V_m$  of the particular gas:

$$D = 13.26 \times 10^{-5} \cdot \eta^{-1.14} \cdot V_m^{-0.589}.$$

Thus, "bubble stability is enhanced by using gases of larger molar volume  $V_m$ , which tend to have higher molecular weight, and liquids of higher viscosity." Id. at 23, ll. 6-8. Sorbitol is employed to increase viscosity in a preferred embodiment (id. at 31, ll. 3-10) and in Examples 1 (id. at 32) and 5 (id. at 38).

When the viscosity value is assumed to be that of water, Equations (3) and (7) reduce to Equation (8), id. at 25, which was used to calculate the Q values given in Table II (id. at 28-29) for twenty-two gases, including the claimed gases of perfluoropropane, perfluorobutane, or perfluoropentane (alternatively known as octafluoropropane, decafluorobutane, and dodecafluoropentane, respectively).<sup>1</sup> Table II gives the Q values for these gases as 1,299; 13,154; and 207,437, respectively.

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<sup>1</sup> The interchangeability of these three terms is noted at columns 11-12 of Nimitz et al. U.S. Patent 5,444,102 (copy enclosed) under the class name "perfluorocarbon." Furthermore, Appellant's specification notes (at 40, ll. 4-5) the interchangeability of dodecafluoropentane and perfluoropentane.

Table IV (id. at 35-38) gives estimated Q values of 191 gases, including the three claimed gases, based on their molecular weights (id. at 33, l. 27 to p. 35, l. 5). Eleven of these gases have Q values of less than five, sixty-four gases have values from five to twenty and the remaining 116 gases, which include the three claimed gases, have values in excess of twenty.

As explained below, the rejection is based in part on the fact that the three claimed gases are included in the large number of suitable gases identified in Table IV. The rejection is also based on the examiner's contention that the use of human protein to stabilize the microbubbles is one of a large number of suitable "existing techniques" that the "Brief Description of the Invention" (reproduced infra) indicates can be used to practice Appellant's invention.

### **C. The rejection**

Claims 48-56 stand rejected as based on a disclosure that fails to provide a written description of the claimed subject matter, as required by 35 U.S.C. § 112, first paragraph.

In order to meet the adequate written description requirement, the applicant does not have to utilize any particular form of disclosure to describe the subject matter claimed, but "the description must clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is claimed." In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989) (citation omitted). Put another way, "the

applicant must . . . convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." Vas-Cath[, Inc. v. Mahurkar], 935 F.2d [1555,] 1563-64, 19 USPQ2d [1111,] 1117 [(Fed. Cir. 1991)].

In re Alton, 76 F.3d 1168, 1172, 37 USPQ2d 1578, 1583 (Fed. Cir. 1996) (emphasis omitted). The examiner has the initial burden of explaining why the disclosure as filed fails to describe the subject matter recited in the rejected claims. See Alton, 76 F.3d at 1175, 37 USPQ2d at 1583:

The examiner (or the Board, if the Board is the first body to raise a particular ground for rejection) "bears the initial burden . . . of presenting a prima facie case of unpatentability." In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). Insofar as the written description requirement is concerned, that burden is discharged by "presenting evidence or reasons why persons skilled in the art would not recognize in the disclosure a description of the invention defined by the claims." [In re Wertheim, 541 F.2d [257,] 263, 191 USPQ [90,] 97 [(CCPA 1976)].

The examiner indicates (Answer at 3) that the rejection is based on the following passages in In re Ruschig, 379 F.2d 990, 154 USPQ 118 (CCPA 1967):

Specific claims to single compounds require reasonably specific supporting disclosure and while we agree with the appellants, as the board did, that naming is not essential, something more than the disclosure of a class of 1000, or 100, or even 48, compounds is required. Surely, given time, a chemist could name (especially with the aid of a computer) all of the half million compounds within the scope of the broadest claim, which claim is supported by the broad

disclosure. This does not constitute support for each compound individually when separately claimed. . . .<sup>2]</sup>  
. . . It is an old custom in the woods to mark trails by making blaze marks on the trees. It is no help in finding a trail or in finding one's way through the woods where the trails have disappeared—or have not been made, which is more likely the case here—to be confronted simply by a large number of unmarked trees. Appellants are pointing to trees. We are looking for blaze marks which single out particular trees. We see none.

379 F.2d at 994-95, 154 USPQ at 122. The rejection is explained as follows:

In the instant case, Applicant did provide written description [support] for the three specific gases that are now claimed since they were named as part of a long list of specifically named compounds that would be useful in the invention. However, the instant claims are drawn to a composition wherein each gas is combined with a specific sub-genus of shell material. The claim[-]designated shell material, human protein, was also described in the specification as part of a large number of shell materials that may be used. Thus, to arrive at the claim[-]designated invention, the artisan must pull a specific gas from one list and pair it with a specific shell material from another list.

Answer at 4. Furthermore, quoting In re Winkhaus, 527 F.2d 637, 640, 188 USPQ 129, 131 (CCPA 1975) ("That a person skilled in the art might realize from reading the disclosure that such a step is possible is not a sufficient indication to that person that that step is part of Appellants' invention. Such an indication is the

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<sup>2</sup> The Answer quotes the headnote based on this passage rather than the passage itself.

least that is required for a description of the invention under the first paragraph of § 112."), the examiner argues that "[a]s in Winkhaus, the pairing of the specific gas with a specific shell material might be seen in hindsight to be possible. However, there is no indication that these particular combinations were originally considered to be a part of Applicant's invention." Answer at 4.

In response to the rejection, Appellant relies on two declarations by a technical expert, Dr. Pamela Hilpert: (a) the July 31, 1998, "Second Declaration of Pamela Hilpert, M.D., Ph.D." (hereinafter the "Second Hilpert Declaration"); and (b) the March 24, 1999, "Third Declaration of Pamela Hilpert, M.D., Ph.D." (hereinafter the "Third Hilpert Declaration"). Both of these declarations discuss "Contrast Agents in Diagnostic Ultrasound," which was authored by Dr. Hilpert and forms Chapter 3 (hereinafter the "Hilpert Chapter") at pages 30-42 of Volume 1 of Diagnostic Ultrasound (1991).

Beginning with the matter of how to construe the rejected claims, we do not understand the examiner's above-quoted assertion that "the instant claims are drawn to a composition wherein each gas is combined with a specific sub-genus of shell material . . . [of] human protein" (Answer at 4) (emphasis added)

to mean that the claims require the human protein to be in shell form, i.e., to encapsulate the microbubbles. Instead, it is clear from the following statement that he believes Appellant's disclosure of using human protein to stabilize microbubbles is limited to forming shells of human protein around the microbubbles: "[Appellant's] instant specification does not teach microbubbles stabilized by human protein but instead teaches microbubbles formed of human protein produced by sonicating a solution of human protein to produce microbubbles within the solution which is then denatured to form discrete shells around the microbubbles" (Answer at 7, ll. 8-11) (footnote omitted).<sup>3</sup>

Turning now to the examiner's rationale for the rejection, because Appellant does not challenge the examiner's position that Ruschiq is relevant to the facts before us, we assume, without deciding, that the examiner's reliance on Ruschiq is appropriate. Instead, Appellant argues that the rejected claims "cover a combination of one of a small number of preferred gases with one of a small number of known techniques for producing microbubble

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<sup>3</sup> To the extent this statement is an argument that the application fails to provide written description support for the entire scope of the "stabilized by human protein" claim recitation, the statement will be given no further consideration because it amounts to a new ground of rejection which does not fall within the exception to the prohibition against raising a new ground of rejection in the Answer. 37 CFR § 1.193(a)(2); M.P.E.P. § 1208.01 (8th ed., Rev. 1, Feb. 2003).

compositions for use in ultrasound imaging" (Reply brief at 7), which we understand to mean that the application as filed contains the blaze marks required by Ruschig.

Considering first the claimed gases, Appellant correctly notes that perfluorobutane (claim 51) (a.k.a. decafluoropentane) and perfluoropentane (claim 54) (a.k.a. dodecafluoropentane) are employed in Examples 1 and 6 (Specification at 32 and 39-40), respectively, and have the highest Q values (13,154 and 207,437, respectively) of the gases listed in Table II (id. at 28). The examiner accordingly concedes that these two gases are disclosed as preferred: "Applicant asserts that perfluorobutane and perfluoropentane are actually used in examples and thus would be preferred. [The] Examiner concurs." Answer at 6, ll. 19-20. Despite this concession, the examiner contends the rejection should be affirmed. Answer at 6, ll. 19-22.

Although perfluoropropane (a.k.a. octafluoropropane) is not used in an example, its Q value of 1,299 places it in a tie for fifth place out of the twenty-two gases in Table II and places it in the third-highest Q-value category (1001-10,000) in Table IV, which together the highest and next highest Q-value categories comprise only twenty-five of the 180 listed gases having Q values of five or more. Furthermore, this gas and the other two claimed

gases are among only ten gases recited in the originally filed claims, of which claims 5, 11, and 12 read:<sup>4</sup>

5. Contrast media of claim 1 wherein the gas is octafluoropropane.

11. Contrast media of claim 1 wherein the gas is decafluorobutane.

12. Contrast media of claim 1 wherein the gas is dodecafluoropentane.

For the foregoing reasons, we agree with Appellant that the application as filed adequately demonstrates a preference for contrast agents containing the three claimed gases.

The examiner asserts that the application discloses "at least eleven different approaches" suitable for forming the microbubbles in Appellant's contrast agents (Answer at 7, 11. 1-4). Assuming for the sake of argument that the examiner is correct on this point, that number is not, in our view, sufficient to satisfy the examiner's initial burden of proof to show a lack of written description support using the Ruschig rationale, since the claimed gases have been shown to be preferred gases. In any event, for the following reasons the

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<sup>4</sup> The gases are recited in the other original claims are sulfur hexafluoride (claim 3), hexafluoropropylene (claim 4), hexafluoroethane (claim 6), octafluoro-2-butene (claim 7), hexafluoro-2-butyne (claim 8), hexafluorobuta-1,3-diene (claim 9), and octafluorocyclobutane (claim 10).

examiner has failed to show that the class of suitable "existing techniques" contains eleven or even as many as seven members.

Appellant's argument for written description support for the "human protein" limitation is based in part on the discussion of "existing techniques" in the "BRIEF DESCRIPTION OF THE INVENTION":

BRIEF DESCRIPTION OF THE INVENTION

It has been discovered that it is possible to identify chemical systems where extremely small gas bubbles are not reactive in an aqueous solution. Relying on the method disclosed herein one skilled in the art may specially select particular gases based on their physical and chemical properties for use in ultrasound imaging. These gases can be used to produce the contrast-enhancing media that is [sic] also the subject matter of this invention. The microbubbles can be produced using certain existing techniques that use ordinary air, and can be infused as in a conventional ultrasound diagnosis.

The method that is the subject matter of this invention requires that calculations be made, consistent with the equations provided herein, based on the intrinsic physical properties of a gas and a liquid. Particularly, the density of a gas, the solubility of a gas in solution, and the diffusivity of a gas in solution, which in turn is dependent on the molar volume of the gas and the viscosity of the solution, are used in the equations disclosed below. Thus, by the method disclosed herein, the physical properties of a given gas-liquid system can be evaluated, the rate and extent of bubble collapse can be estimated, and gases that would constitute effective contrast-enhancing agents can be selected based on these calculations. Using existing techniques, substantially improved contrast-enhancing media may then be produced and used to improve the quality and usefulness of ultrasound imaging.

Specification at 20-21 (our emphasis). That the suitable "existing techniques" include using Sorbitol as a viscosity-increasing agent is evident from the above-noted fact that Sorbitol is used for this purpose in a preferred embodiment and in Examples 1 and 6. Although this preferred embodiment and these examples apparently employ free gas microbubbles, neither the examiner nor Appellant construes Appellant's specification as showing a preference for the disclosed "existing techniques" which are useful for forming free gas microbubbles.

Appellant's specification includes two passages which describe contrast agents which employ human protein. The first passage (id. at 12, ll. 11-23), which does not use the term "human protein," is a description of "Albunex (Molecular Biosystems, Inc., San Diego, CA)" under the heading "Techniques For Measuring Ultrasound Contrast-Enhancement Phenomena" (id. at 6), subheading "B. BEAM ATTENUATION" (id. at 11). Albunex is "a suspension of 2-4 micron encapsulated air-filled microspheres" (id. at 12, ll. 19-20). Albunex contrast agents are discussed in the Hilpert Chapter, which at page 33 and its footnote, under the heading "ENCAPSULATED GAS BUBBLES" (at 32), explains that Albunex is produced by the sonication of 5% human serum albumin. The Hilpert Chapter's discussion of this contrast agent is briefly addressed in the Second Hilpert Declaration at ¶ 7(1) and in the

Third Hilpert Declaration at ¶ 6(4), albeit without noting the reference to Alburnex in Appellant's specification. Appellant contends, and the examiner apparently agrees, that these Alburnex microspheres, which Appellant characterizes as "microspheres containing microbubbles" (Brief at 13, ll. 10-11), constitute one of the "existing techniques" that can be used to practice Appellant's invention.

The second relevant passage, which does employ the term "human protein," is the last paragraph (hereinafter "the EPO paragraph") in the following text, which appears in the "BACKGROUND" portion of the specification (id. at 1-20) under the heading "The Materials Presently Used as Contrast-Enhancing Agents" (id. at 13), subheading "C. MICROBUBBLES" (id. at 16):

[C]ognizant of the advantages to be gained by use of microbubbles as contrast-enhancing agents by virtue of their large scattering cross-section, considerable attention has been focused on developing mixtures containing microbubbles that are rendered stable in solution. Enhancing the stability of gas microbubbles may be accomplished by a number of techniques.

Each of the following techniques essentially involves suspending a collection of microbubbles in a substrate in which a bubble of ordinary gas is more stable than in the bloodstream.

In one approach, microbubbles are created in viscous liquids that are injected or infused into the body while the ultrasound diagnosis is in progress. The theory behind the use of viscous fluids involves an attempt to reduce the rate at which the gas dissolves into the liquid and, in so doing, provide a more stable chemical environment for the bubbles so that their lifetime is extended.

Several variations on this general approach have been described. [Widder et al.] EPO Application No. 0324938 [copy enclosed<sup>5</sup>] describes a viscous solution of a biocompatible material, such as a human protein, in which microbubbles are contained. By submitting a viscous protein solution to sonication, microbubbles are formed in the solution. Partial denaturation of the protein by chemical treatment or heat provides additional stability to microbubbles in the solution by decreasing the surface tension between bubble and solution.

Id. at 16, l. 31 to p. 17, l. 26 (emphasis added). Inasmuch as the rejection is based on the number of disclosed "existing techniques" rather than on the interpretation of the EPO paragraph, we need not decide how it should be construed. Nevertheless, we offer the following comments. Appellant characterizes the EPO paragraph as describing an "aqueous solution[] of human protein, containing microbubbles" (Brief at 13, ll. 7-9) without also explaining whether the microbubbles are free gas microbubbles, encapsulated microbubbles, or described as being of either type. However, Dr. Hilpert's testimony (Second Hilpert Declaration at ¶ 7(2)) that the description of the contrast agents at pages 16 and 17 of Appellant's specification (including the EPO paragraph) "is consistent with the descriptions in the Hilpert Chapter" suggests Appellant believes the microbubbles described in the EPO paragraph are encapsulated in human protein, as is the case with Alburnex, the only human

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<sup>5</sup> The copy in Appellant's application file is incomplete.

protein-containing contrast agent discussed in the Hilpert Chapter. Thus, Appellant's position appears to be that the EPO paragraph describes a human protein solution which contains microbubbles that are encapsulated in shells of human protein.

Apparently referring to the contents of the EPO application rather than to Appellant's description of that application in the EPO paragraph, the examiner asserts: "Appellant's specification does not really describe a solution of human protein and microbubbles, except as an intermediate" (Answer at 7, ll. 12-13), because "prior to formation of the final product (as set forth in the cited European application 0,324,938), the microbubbles are separated from the denatured protein that did not form around a microbubble." Id. at 7 n.7. These assertions appear to be inconsistent with the following passage in the EPO application, which calls for removal of no more than a major portion of the clarified albumin solution:

Beneath the collected layer [of microspheres], the clarified albumin solution will be substantially free of microspheres. It is therefore possible to drain off a major portion of the solution through the bottom outlet. For example, one-half to three-fourths of the solution can be removed. However, it is desirable to retain a sufficient solution volume to permit full redispersion of the concentrated microspheres.

EPO application at 5, ll. 19-23. Furthermore, we note that the EPO application also discusses prior-art albumin contrast agents

developed by Dr. Feinstein, which are not described as involving encapsulation:

Dr. Feinstein . . . found that by sonication of a heat-sensitive protein, such as albumin, microbubbles of improved stability were obtained. (See Feinstein, PCT Application WO 84/02838, corresponding to allowed U.S. application Serial No. 805,975, filed December 5, 1985)[now Patent 4,718,433 (copy enclosed)<sup>6</sup>]. Concentrations of microbubbles of 10 to 14 x 10<sup>6</sup> microbubbles per millimeter were obtained with bubble sizes from 2 to 9 microns (Keller, Feinstein, and Watson, 1987). The microbubbles persisted for 24 to 48 hours.

EPO application at 2, 11. 38-43. Furthermore, the EPO application describes the Widder et al. contrast agents as achieving encapsulation by following Feinstein's sonication step with a second, different sonication step:

The imaging agents of this invention are preferably produced from a heat-denaturable biocompatible protein by a stepwise sonication procedure. As with the Feinstein method, an aqueous solution of protein is subjected to sonication to form gas microbubbles while concurrently heating the solution to insolubilize small portions of the protein. However, the improved sonication procedure, which results in the increased concentration of highly stable microbubbles utilizes a novel sequential sonication. In the initial sonication phase, the sonicator horn is directly contacted with the solution (viz. by immersion just below the upper surface of the solution). This initial sonication is carried out without appreciable foaming of the solution. In the next phase of the sonication, foaming is promoted. The sonicator horn is withdrawn to a position in the ambient atmosphere above but proximate to the surface of the solution. Intense

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<sup>6</sup> The abstract of this patent explains that Feinstein used human serum albumin.

foaming and aerosolating occurs. The population of microbubbles is thereby greatly increased and the microbubbles are encapsulated with denatured protein to obtain a dispersion of highly stable microspheres.

EPO Application at 3, ll. 17-27. The resulting contrast agents can be stored at room temperature for four to eight weeks or longer. Id. at 3, ll. 10-11.

Returning to the question of how many suitable "existing techniques" are disclosed in Appellant's specification, although the examiner puts the number at "at least eleven" (Answer at 7, ll. 1-4), he specifically identifies only three, one of which is the human protein technique described in the above-quoted EPO paragraph and another is "free gas microbubbles in a viscous solution (sorbitol)" (id. at 7, ll. 4-11), which as noted above is the stabilizing technique employed in a preferred embodiment and in Examples 1 and 5. The third alleged approach is "free gas microbubbles in saline" (id. at 7, l. 5).

Appellant contends that the examiner's figure of "at least eleven" is too high and must include techniques which are not capable of being used to form the microbubbles in Appellant's contrast agents, such as the disclosed use of solid IDE particles (Specification at 14, ll. 16-35) and the use of liquid emulsions containing perfluorooctyl bromide (id. at 15, ll. 24-33). According to Appellant, "there are at most a half-dozen or so techniques mentioned in the specification which employ

microbubbles. Four of them are named in the Brief (p. 13)."  
Reply brief at 5, l. 8. The brief, in addition to citing the EPO  
paragraph, cites: (1) suspensions of crystals which contain or  
generate microbubbles (Specification at 15, ll. 1-12);  
(2) Albunex microspheres containing microbubbles (id. at 12, ll.  
19-23); and (3) aqueous suspensions of liposomes containing gases  
or gas precursors (id. at 15, l. 34 to p. 15, l. 14).  
Consequently, combining the allegedly suitable "existing  
techniques" identified by the examiner and Appellant yields only  
six such techniques, far short of the "at least eleven" figure  
asserted by the examiner.

To summarize, the examiner has not sustained his burden of  
proof to establish that the written description does not provide  
sufficient "blaze marks" to lead a person skilled in the art to  
the subject matter of claims 48-56.

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Application 08/466,104

For the foregoing reasons, the rejection is reversed with respect to all of the rejected claims.

**REVERSED**

JOHN C. MARTIN	)	
Administrative Patent Judge	)	
	)	
	)	
	)	BOARD OF PATENT
RICHARD E. SCHAFER	)	APPEALS AND
Administrative Patent Judge	)	INTERFERENCES
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	)	
	)	
RICHARD TORCZON	)	
Administrative Patent Judge	)	

JCM/jcm

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Application 08/466,104

cc:

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Enclosures: (a) Nimitz et al. U.S. Patent 5,444,102;  
(b) Complete copy of EPO Application 324,938; and  
(c) Feinstein Patent 4,718,433.