

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MARK K. DEBE

Appeal No. 95-4966
Application No. 08/072,182¹

ON BRIEF

Before JOHN D. SMITH, PAK and WALTZ, **Administrative Patent Judges.**

WALTZ, **Administrative Patent Judge.**

DECISION ON APPEAL

This is an appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 15 through 18 and 20 through 22, which are the only claims remaining in this application.

¹ Application for patent filed June 3, 1993. According to the appellant, the application is a division of Application No. 07/681,332, filed April 5, 1991, now U.S. Patent No. 5,238,729.

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According to appellant, the invention is directed to a method of making a composite article with an electrically conductive surface comprising the steps of providing whisker-like structures on a substrate, encapsulating these structures, and delaminating this layer of encapsulated structures from the substrate (Brief, page 4).

Claims 15 and 17 are illustrative of the subject matter on appeal and are reproduced below:

15. A method for preparing a composite article having an electrically conductive surface comprising the following steps:

(a) providing conductive whisker-like structures on a substrate, wherein said whisker-like structures form an array of discrete microstructures and have an areal number density of 40-50/ μm^2 and are perpendicular to said substrate;

(b) encapsulating said microstructures with an encapsulating material, wherein a layer comprising encapsulated microstructures is produced; and

(c) delaminating said layer from said substrate to expose a surface on said layer, such that at the surface of said layer, one end of said microstructures is exposed, and that the end of said microstructures that is exposed and the surface of said layer are coincident on a common side of said layer.

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17. The process according to claim 15, wherein the whisker-like structures are provided on the substrate according to the following steps:

(a) vacuum vapor depositing an organic material onto the substrate to a coating thickness in a range of 50-2500 Angstroms; and

(b) heating the deposited organic material under vacuum for a period of time until the deposited organic material forms discrete oriented whisker-like structures 0.1 to 2.5 μm in length.

The examiner has relied upon the following references as evidence of obviousness:

Debe	4,812,352	Mar. 14, 1989
Perrotta et al. (Perrotta)	4,892,693	Jan. 9, 1990

Claims 17 and 20 stand rejected under 35 U.S.C. § 112, first paragraph, for having no support in the original specification (Answer, page 3). Claims 15-18 and 20-22 stand rejected under 35 U.S.C. § 103 as unpatentable over Perrotta in view of Debe (Answer, page 4). We *affirm* the examiner's rejection under § 112 but *reverse* the rejection under § 103 for reasons which follow.

OPINION

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A. The Rejection under § 112, First Paragraph

Appellant does not contest the examiner's final rejection of claims 17 and 20 under the first paragraph of § 112 (Brief, page 7). Therefore we summarily affirm the examiner's rejection. We note that the claimed coating thickness of "50-2500 Angstroms" is *not* equivalent to the original disclosure of a coating thickness of "0.05 to 0.25 micrometers" (see the specification, page 14, lines 19-20).²

We further note that appellant has "rewritten" claim 17 in the Appendix to the Brief with --0.05 to 0.25 micrometers-- substituted for "50-2500 Angstroms" (Brief, page 7). The examiner states that this "proposed" amendment would overcome the rejection under the first paragraph of § 112 but this amendment has not been properly submitted and has not been entered (Answer, page 7). Any "proposed" amendment to appealed claim 17 is not before us. Our affirmance of this rejection is based on claim 17 as presented in the Amendment

² The range "0.05 to 0.25 micrometers" is equivalent to "500 to 2500 Angstroms" since 1 Angstrom is equal to 10^{-10} meters. See *Hackh's Chemical Dictionary*, 3rd ed., p. 57, The Blakiston Co., Inc. (1953).

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dated Sept. 28, 1994 (Paper No. 10) and as before the examiner in the Final Rejection dated Dec. 5, 1994 (Paper No. 11).

For the foregoing reasons, the rejection of claims 17 and 20 under 35 U.S.C. § 112, first paragraph, is affirmed.

B. The Rejection under § 103

The method of appealed claim 15 recites three steps to prepare a composite article with an electrically conducting surface: (a) providing conductive whisker-like structures on a substrate wherein the whisker-like structures form an array of discrete microstructures and have an areal density of 40-50/square micron and are perpendicular to the substrate; (b) encapsulating these microstructures to form a layer comprising encapsulated microstructures; and (c) delaminating said layer from said substrate to expose a surface on said layer, with one end of the microstructures being exposed.

The examiner finds that "Perrotta et al. teaches the basic claimed process . . . of providing filaments (ie. whisker-like structures) on a substrate; encapsulating the filaments with an encapsulating material to form a composite on the substrate; and delaminating the composite from the substrate." (Answer, page 4). The examiner also finds that

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"Debe discloses a process for forming substantially perpendicular organic whiskers on a substrate by vacuum vapor depositing a thin . . . layer of organic material onto a substrate" (Answer, page 5). The examiner concludes that it would have been obvious "to use the method disclosed in Debe to produce the structures on the substrate in Perrotta et al. in view of the nonlimiting statement therein that the growths can be formed on the substrate by 'a number of different processes such as the Gas Phase Method . . .' and the reference to 'Other methods' at col. 3, line 39." (Answer, page 6).

Appellant argues that Perrotta requires the filaments to be substantially uni-directional in a direction other than perpendicular to the substrate while the structures recited in appealed claim 15 are perpendicular to the substrate (Brief, page 8). Appellant also argues that there is no teaching or suggestion or knowledge generally available in the art that would lead a person skilled in the art to make the proposed combination of Perrotta and Debe (*Id.* at pages 8-9).

"When a rejection depends on a combination of prior art references, there must be some teaching, suggestion, or

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motivation to combine the references. [Citation omitted]." *In re Rouffet*, 149 F.3d 1350, 1355, 47 USPQ2d 1453, 1456 (Fed. Cir. 1998). When determining the patentability of a claimed invention which combines several elements, "the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination. [Citations omitted]." *In re Rouffet*, 149 F.3d at 1356, 47 USPQ2d at 1456. It is noted that evidence of a suggestion, teaching or motivation to combine may come from the prior art references themselves, the knowledge of one of ordinary skill in the art, or from the nature of the problem to be solved. *See Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573, 37 USPQ2d 1626, 1630 (Fed. Cir. 1996).

The examiner's evidence of a suggestion to combine the process of Debe to make the microstructures on the substrate of Perrotta is the teaching in Perrotta that

Substrates with the preferred single-crystal filament growths on them can be manufactured by a number of different processes, such as the Gas Phase Method, the Gas-Liquid Solid Method, the Evaporation Method, and the Replication Method. (Column 2, lines 61-65, see the Answer, pages 5-7).

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The examiner also cites Perrotta, column 3, line 39, (see the Answer, pages 6-7) for the following disclosure:

Other methods may be difficult to classify. For example, U.S. Pat. No. 3,011,870 may be an example of the Gas Phase Method or the Gas-Liquid-Solid Method.

We do not find, on this record, that the examiner has shown that the prior art, as a whole, would have suggested the desirability of making the combination as proposed by the examiner. The examiner has not shown on this record why one of ordinary skill in the art would have used the deposition and vacuum annealing process of Debe in place of the numerous methods disclosed by Perrotta (see Perrotta, column 3, lines 14-47). The examiner has not cited any evidence that the method of Debe falls within the specific methods taught by Perrotta. We find that a plain reading of the examiner's evidence cited from Perrotta is insufficient to establish a suggestion that any other method of depositing microstructures on a substrate (such as disclosed by Debe) could be substituted for the methods taught by Perrotta.

Furthermore, the filaments of Perrotta are in a "direction other than perpendicular to the substrate" (column 2, lines 52-54, and claim 1) while the microstructures of Debe

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and the claimed method are perpendicular to the substrate (see Debe, column 4, lines 36-38). The examiner states that only the embodiment of Fig. 6 in Perrotta is drawn to filaments in a direction other than perpendicular to the substrate while the general disclosure of Perrotta teaches that "[t]he fibers can be aligned" (Answer, page 8).

Perrotta teaches aligning a plurality of the filaments in substantially the same direction since the substrate originally bears crystalline random filaments (column 2, lines 29-33). This alignment is accomplished by rolling and compressing the filaments to orient the filaments in the general direction of the applied force (column 6, lines 58-60, and Figures 6 and 7). The examiner has not shown any disclosure or teaching in Perrotta pertinent to the manufacture of filaments that are perpendicular to the substrate (see Figures 1 through 5). Accordingly, Perrotta alone would not have suggested to the artisan the formation of perpendicular microstructures on a substrate. The only disclosure of forming microstructures perpendicular to the substrate occurs in Debe and the examiner's proposed

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combination of Debe and Perrotta fails for reasons discussed above.

For the foregoing reasons, we determine that the examiner has not presented a *prima facie* case of obviousness in view of the applied prior art. Accordingly, the rejection of claims 15-18 and 20-22 under 35 U.S.C. § 103 as unpatentable over Perrotta in view of Debe is reversed. *In re Oetiker*, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992).

C. Summary

The rejection of claims 17 and 20 under 35 U.S.C. § 112, first paragraph, is affirmed. The rejection of claims 15-18 and 20-22 under 35 U.S.C. § 103 as unpatentable over Perrotta in view of Debe is reversed.

The decision of the examiner is affirmed-in-part.

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No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

JOHN D. SMITH)	
Administrative Patent Judge)	
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)	BOARD OF PATENT
CHUNG K. PAK)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
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