

The opinion in support of the decision being entered today
is *not* binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte S.V. BABU, SHARATH HEGDE,
and SUNIL CHANDRA JHA

Appeal 2007-1522
Application 10/631,698
Technology Center 1700

Decided: July 31, 2007

Before EDWARD C. KIMLIN, BRADLEY R. GARRIS, and
JEFFREY T. SMITH, *Administrative Patent Judges*.

KIMLIN, *Administrative Patent Judge*.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-7, 10-29, 61-63, and 65. Claim 1 is illustrative:

1. An aqueous polishing slurry for chemical-mechanical polishing, comprising particles of MoO₂ and an oxidizing agent, said oxidizing agent comprising one or more selected from the group consisting of nitric acid, potassium iodide, potassium iodate, hydroxylamine hydrochloride, and potassium permanganate.

Appeal 2007-1522
Application 10/631,698

The Examiner relies upon the following references as evidence of obviousness:

Chamberlin	US 2001/0013506 A1	Aug. 16, 2001
Kambe	US 2001/0045063 A1	Nov. 29, 2001
Canaperi	US 6,348,076 B1	Feb. 19, 2002
Hasegawa	US 2002/0098701 A1	Jul. 25, 2002
Kumar	US 6,726,990 B1	Apr. 27, 2004

Appellants' claimed invention is directed to an aqueous polishing slurry comprising particles of MoO₂ and an oxidizing agent selected from the recited group. The slurry is used for chemical-mechanical polishing.

Appealed claim 65 stands rejected under 35 U.S.C. § 112, 1st ¶, description requirement. The appealed claims stand rejected under 35 U.S.C. § 103(a) as follows:

- (a) claims 1-7, 10-29, 61-63, and 65 over Canaperi in view of Kumar;
- (b) claims 1-7, 10-28, 61-63, and 65 over Chamberlin in view of Kambe and Canaperi; and
- (c) claim 29 over Chamberlin in view of Kambe and Hasegawa.

We have thoroughly reviewed each of Appellants' arguments for patentability, as well as the Specification and Declaration evidence relied upon in support thereof. However, we are in full agreement with the Examiner that the claimed subject matter would have been obvious to one of ordinary skill in the art within the meaning of § 103 in view of the applied prior art. Also, we agree with the Examiner that the subject matter of claim 65 does not find original descriptive support in the specification.

Accordingly, we will sustain the Examiner's rejections for the reasons set

Appeal 2007-1522
Application 10/631,698

forth in the Answer, which we incorporate herein, and we add the following primarily for emphasis.

We consider first the Examiner's rejection of claim 65 under § 112, 1st ¶, description requirement. We agree with the Examiner that the original Specification fails to convey the concept to one of ordinary skill in the art that the polishing composition of the present invention lacks "sufficient H₂O₂ to react with said particles of MoO₂." *Vas-cath Inc. v. Mahurkar*, 935 F.2d 1555, 1563, 19 USPQ2d 1111, 1116 (Fed. Cir. 1991). Appellants' original Specification provides no disclosure regarding the amount of H₂O₂, if any, in the polishing composition. The Specification disclosure referenced by Appellants pertains to a buffing step, not the polishing step, which employs a dilute suspension of hydrogen peroxide which reacts with MoO₂ to remove residual amounts thereof that may remain on the surface. While Appellants rely upon Declaration evidence submitted by three present inventors regarding the instability of H₂O₂ in composition with MoO₂, we agree with the Examiner that these Declarations do not establish that the Specification, as originally filed, conveys to one of ordinary skill in the art that the polishing composition should comprise any particular level of H₂O₂.

We next consider the § 103 rejection over Canaperi in view of Kumar. There is no dispute that Canaperi, like Appellants, discloses an aqueous polishing slurry for chemical-mechanical polishing comprising abrasive particles and one of the presently claimed oxidizing agents, such as nitric acid, potassium iodate, and potassium permanganate. Canaperi fails to

Appeal 2007-1522
Application 10/631,698

expressly disclose that the abrasive material may be particles of MoO₂. Canaperi does state, however, that “[t]he abrasive particles employed include those conventionally used in polishing slurries,” examples of which include alumina, silica, ferric oxide, zirconia, ceria and titanium dioxide” (col. 3, ll. 64-66). Kumar, on the other hand, teaches chemical-mechanical polishing compositions comprising particles of MoO₂ as an abrasive material (col. 10, ll. 32-37). Accordingly, based on the combined teachings of Canaperi and Kumar, we find that the Examiner has drawn the proper legal conclusion that it would have been obvious for one of ordinary skill in the art to select particles of MoO₂ as the abrasive material in the polishing composition of Canaperi. Inasmuch as both Canaperi and Kumar are directed to aqueous slurries for chemical-mechanical polishing, we agree with the Examiner that one of ordinary skill in the art would have possessed the requisite reasonable expectation of success in using particles of MoO₂ in the polishing composition of Canaperi.

We do not subscribe to Appellants’ argument that the Examiner has failed to demonstrate what part of Canaperi would have directed one of ordinary skill in the art to consider Kumar and, having turned to Kumar, what part of Canaperi would have caused one of ordinary skill in the art to pick MoO₂ out of the list of abrasives disclosed by Kumar. We find that Canaperi’s disclosure of using abrasive particles that are conventionally used in polishing slurries would have directed one of ordinary skill in the art to consider other known polishing slurries and their abrasive materials besides

the abrasive materials listed by Canaperi. Furthermore, one of ordinary skill in the art would have chosen MoO₂ from the list disclosed by Kumar since Kumar teaches that all the abrasive materials included in the list are effective. It is well settled that choosing one from among many taught by the prior art to be useful for a particular purpose is a matter of obviousness for one of ordinary skill in the art. While Appellants maintain that “different polishing slurries have widely varying polishing selectivity for different materials, as demonstrated by the specification and the prior art” (principal Br. 15, first para.), we are satisfied that one of ordinary skill in the art would have needed to resort to no more than routine experimentation to determine the specific polishing slurries that are most effective for polishing a particular material.

Appellants also have “submitted the declaration of inventors Babu, Jha and Hegde describing tests showing the unsuitability of H₂O₂ as an oxidizing agent in combination with MoO₂, which teaches away from the Kumar reference” (principal Br. 17, second para.). All three Declarations state that various mixtures of MoO₂ powder and H₂O₂ effervesced, making them unsuitable for use in a chemical-mechanical polishing process. However, the Declaration evidence fails to establish that the Declarants, in formulating a polishing slurry comprising MoO₂ and H₂O₂, made all the necessary adaptations that would have been obvious to one of ordinary skill in the art to achieve a stable polishing slurry. *In re Lamberti*, 545 F.2d 747, 192 USPQ 278 (CCPA 1976); *In re Weber*, 405 F.2d 1403, 160 USPQ 549,

Appeal 2007-1522
Application 10/631,698

553 (CCPA 1969); *In re Michalek*, 162 F.2d 229, 74 USPQ 107 (CCPA 1947). Also, one of ordinary skill in the art would not have been wed to the use of H₂O₂ as an oxidizing agent in the polishing slurry of Kumar. Kumar teaches that an oxidizing agent such as H₂O₂, can be added for polishing metals, thereby indicating that other oxidizing agents may be used in combination with abrasive particles of MoO₂, such as the oxidizing agents disclosed by Canaperi and presently claimed, namely, nitric acid, potassium iodate, and potassium permanganate. We are confident that one of ordinary skill in the art would have had the wherewithal to determine which particular oxidizing agents are compatible with MoO₂.

We now turn to the Examiner’s § 103 rejection over Chamberlin in view of Kambe and Canaperi. Since we agree with Appellants that “the Examiner’s rejections in this instance are essentially the same as those based on Canaperi and Kumar” (principal Br. 19, sixth para.), it follows that we will also sustain this rejection. We find no merit in Appellants’ argument that “Kambe teaches away from the present invention because it does not disclose an oxidizing agent” (principal Br. 22, second para.). Kambe’s silence with respect to an oxidizing agent is not tantamount to a teaching that an oxidizing agent should not be present in the polishing composition. Chamberlin and Canaperi, as well as Kumar, evidence that it was known in the art to employ an oxidizing agent in a composition used for chemical-mechanical polishing, and Appellants have not argued otherwise. For sure,

Appeal 2007-1522
Application 10/631,698

Kambe provides no teaching that an oxidizing agent should not be used in combination with abrasive particles of MoO₂.

Regarding the separate rejection of claim 29 over the combined teachings of Chamberlin, Kambe, and Hasegawa, we find no error in the Examiner's conclusion that it would have been obvious for one of ordinary skill in the art to add EDTA to the polishing composition of Chamberlin. We are not persuaded by Appellants' argument that Hasegawa teaches away from the present invention since the reference teaches that it is **preferable** for the aqueous polishing composition not to contain an abrasive material. Certainly, a preference for not using an abrasive also provides a teaching that an abrasive may be used while accompanied by certain disadvantages, such as when soft and hard parts are to be polished together. It is well settled that the use of non-preferred embodiments of the prior art are a matter of obviousness for one of ordinary skill in the art. *In re Burckel*, 592 F.2d 1175, 1179, 201 USPQ 67, 70 (CCPA 1979); *In re Susi*, 440 F.2d 442, 446 n.3, 169 USPQ 423, 426 n.3 (CCPA 1971).

Accordingly, Hasegawa's non-preferred use of an abrasive material does not undermine the obviousness of using a known chelating agent, EDTA, in the polishing solution of Chamberlin. Chamberlin discloses that "the slurry compositions can contain conventional auxiliary components" and states no prohibition against using conventional chelating agents (para. [0015]). We note that Appellants lodge no argument why it would have been nonobvious for one of ordinary skill in the art to employ a conventional

Appeal 2007-1522
Application 10/631,698

chelating agent, such as EDTA, in a chemical-mechanical polishing composition of the type disclosed by Chamberlin.

As a final point, we note that Appellants base no argument upon objective evidence of nonobviousness which would serve to rebut the inference of obviousness established by the Examiner.

In conclusion, based on the foregoing and the reasons well stated by the Examiner, the Examiner's decision rejecting the appealed claims is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

clj

Fennemore Craig, P.C.
1700 Lincoln St.
Suite 2625
Denver, CO 80203