

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* MICHAEL J. DAY, MAKARAND P. GORE,  
and JAYPRAKASH C. BHATT

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Appeal 2008-2873  
Application 11/250,268  
Technology Center 1700

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Decided: July 18, 2008

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Before BRADLEY R. GARRIS, ROMULO H. DELMENDO, and  
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134(a) from a final rejection of all pending claims 1-38. (Final Office Action entered August 8, 2006.) We have jurisdiction under 35 U.S.C. § 6(b).

Appellants' invention relates to color forming compositions that undergo a color change when exposed to energy, such as light or heat, for "generating images on a variety of substrates." (Spec. ¶ 0001). The "composition includes a polymer matrix; an aromatic sulfonylurea activator; a radiation absorber, and an isobenzofuranone color former dye." (*Id.* ¶ 0004).

Representative claims 1, 12, 16, and 23 read as follows:

1. A color forming composition, comprising:  
a polymer matrix;  
an activator comprising aromatic sulfonylurea;  
a radiation antenna, and  
an isobenzofuranone color former;  
wherein said antenna renders said color forming composition reactive to form colors when exposed to radiation of a specific wavelength.
12. The composition of claim 1, further comprising a melting aid.
16. A method of forming a color-forming composition, for labeling an optical disc, comprising:  
preparing a radiation-curable polymer matrix;  
dissolving an aromatic sulfonyl urea activator species in said radiation-curable matrix;  
dissolving an isobenzofuranone color former in said radiation-curable matrix; and  
forming a layer of said matrix comprising said activator and color former on an optical disc.
23. A method of forming an image, comprising:  
selectively applying electromagnetic radiation to a color forming composition sufficient to develop irradiation portions of the color forming composition from a predevelopment state to a post-development state that is visually different than the pre-development state, wherein a color of said post-

development state depends on an amount of time a portion of said composition was exposed to said radiation, said color forming composition including a polymer matrix having an isobenzofuranone color former and an aromatic sulfonyl urea activator dissolved in said polymer matrix, said composition further including a radiation antenna wherein said antenna renders said color forming composition reactive to form colors when exposed to radiation at specific wavelengths.

The prior art references relied upon by the Examiner to reject the claims on appeal are:

Iwasaki	U.S. 5,444,036	Aug. 22, 1995
Takahashi	U.S. 5,612,280	Mar. 18, 1997
Nishioka	U.S. 5,977,020	Nov. 2, 1999
Shirai	U.S. 2002/0065196	May 30, 2002
Gore	U.S. 200410146812	Jul. 29, 2004
Shirai	U.S. 200510054528	Mar. 10, 2005

The following rejections are before us for review:

Claims 1-3, 5, 6, 10-15, 33, 36, and 38 are rejected under 35 U.S.C. § 102(b) as anticipated by Shirai '196 or Takahashi.<sup>1</sup>

Claims 1-3, 5, 6, 10-15, 23-31, 33, and 36-38 are rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative, under 35 U.S.C. § 103(a) as obvious over Nishioka.<sup>2</sup>

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<sup>1</sup> Although the Examiner's Answer states claims 1-3, 5, 6, 10-18, 21, and 22 are anticipated by Shirai '196 or Takahashi (Ans. 3), Appellants recognize the correct listing of rejected claims is 1-3, 5, 6, 10-15, 33, 36, and 38. (App. Br. 5). In the communication responding to Appellants' Reply Brief, the Examiner corrects the Answer by stating that "[t]he appellant's statement of the grounds of rejection to be reviewed is correct." (Communication mailed November 7, 2007 at 2).

<sup>2</sup> Although claims 1-3, 5, 6, 10-15, 23-31, 33, and 26-38 were listed as rejected (Ans. 4), it is clear from context that this listing included a

Claims 1-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combined teachings of Gore, Iwasaki, Shirai '196, Nishioka, and Shirai '528.

We AFFIRM.

#### ISSUES

Have Appellants shown reversible error in the Examiner's finding that the subject matter of claims 1-3, 5, 6, 10-15, 33, 36, and 38 is anticipated by Shirai '196 or Takahashi?

Have Appellants shown that the Examiner reversibly erred in determining that the subject matter of claims 1-3, 5, 6, 10-15, 23-31, 33, and 36-38 is anticipated by, or in the alternative, would have been obvious to one of ordinary skill in the art in view of Nishioka?

Have Appellants shown reversible error in the Examiner's determination that the subject matter of claims 1-38 would have been obvious to one of ordinary skill in the art over the combined teachings of Gore, Iwasaki, Shirai '196, Nishioka, and Shirai '528?

#### FINDINGS OF FACT

1. Shirai '196 teaches a color forming composition comprising a polymer matrix, an aromatic sulfonylurea activator, and a dye-precursor selected from fluoran dyes. (¶¶ 0017-0018, 0035, 0083, 0101, 0109).

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typographical error and that the rejected claims should read 1-3, 5, 6, 10-15, 23-31, 33, and 36-38. (App. Br. 5; Communication mailed November 7, 2007 at 2).

2. Takahashi discloses a color forming composition comprising a polymer matrix, an aromatic sulfonylurea activator, and a dye-precursor selected from fluoran leuco dyes. (Col. 3, ll. 49-64; col. 12, l. 52 through col. 13, l. 59; col. 14, ll. 12-15).
3. Appellants state that the radiation antenna in the inventive color forming composition “can be an inorganic compound, e.g., ferric oxide, carbon black, selenium, *or the like*.” (Emphasis added. ¶ 0028).
4. The prior art discloses compositions containing inorganic pigments comprising, *inter alia*, zinc oxide and titanium dioxide. (Shirai ‘196, ¶ 0107; Takahashi, col. 15, ll. 15-22; Nishioka, col. 22, ll. 4-11).
5. Shirai ‘196 and Takahashi disclose a color forming composition containing thermo-fusible sensitizers, m-terphenyl and p-benzylbiphenyl, which are the same compounds Appellants disclose as melting aids. (Shirai 196, ¶ 0077; Takahashi, col. 14, ll. 37-50; Spec. ¶ 0035).
6. Nishioka discloses a color forming composition containing heat-fusible sensitizing agents comprising N-benzylbiphenyl. (Col. 21, ll. 9-23).
7. Imaging materials, disclosed by Gore, “include an antenna, a color former and an activator, all dispersed in a matrix. . . . The antenna readily absorbs energy . . . [that] heats the mixture which causes the color former and the activator to mix and react, causing the color former to change color.” (¶ 0002).
8. Gore discloses the imaging materials “may include a color-former such as a fluoran leuco dye.” (¶ 0008).
9. Gore teaches that “[a]ctivators may include, *without limitation*, proton donors and phenolic compounds such as bisphenol-A and bisphenol-S,”

and that these activators are used with color formers “includ[ing], *without limitation*, leuco dyes such as fluoran leuco dyes and phthalide color formers.” (Emphasis added; ¶ 0016).

10. Shirai ‘528 states that conventional thermosensitive recording material suffers from color erasure over time. (¶ 0005).
11. Shirai ‘528 describes that it was known in the prior art to overcome the color erasure problem and obtain “extremely high storage stability of recorded images” by using aromatic sulfonylurea activators instead of phenol activators. (¶¶ 0008, 0076).
12. Appellants’ Specification states that the antenna in the inventive composition can be made of indolium compounds, including 2-[2-[2-chloro-3-[(1,3-dihydro-3,3-dimethyl-1-propyl-2H-indol-2-ylidene)ethylidene]-1-cyclohexen-1-yl]ethenyl]-3,3-dimethyl-1-propylindolium iodide. (¶ 0028).
13. Gore discloses a suitable antenna can be made from “compound[] IR780 (Aldrich 42,531-1),” which is an indolium compound of 2-[2-[2-chloro-3-[(1,3-dihydro-3,3-dimethyl-1-propyl-2H-indol-2-ylidene)ethylidene]-1-cyclohexen-1-yl]ethenyl]-3,3-dimethyl-1-propylindolium iodide. (¶ 0012).
14. Appellants’ stated antenna indolium material used in the inventive composition is the same as the antenna indolium material disclosed by Gore. (Spec. ¶ 0028; Gore, ¶ 0012).
15. Gore claims a radiation antenna comprising a phthalocyanine dye. (Claims 5, 17, 29, and 40).

## PRINCIPLES OF LAW

“To anticipate a claim, a prior art reference must disclose every limitation of the claimed invention, either explicitly or inherently.” *In re Schreiber*, 128 F.3d 1473, 1477 (Fed. Cir. 1997).

It is well settled that when a claimed product reasonably appears to be substantially the same as a product disclosed in the prior art, the burden of proof is shifted to applicant to prove that the prior art product does not inherently or necessarily possess the characteristics attributed to the claimed product. *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990); *In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

“[E]vidence establishing lack of all novelty in the claimed invention necessarily evidences obviousness.” *In re Fracalossi*, 681 F.2d 792, 794 (CCPA 1982).

“The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results.” *KSR Int’l Co. v. Teleflex, Inc.*, 127 S.Ct. 1727, 1739 (2007). Nevertheless, “rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006).

“[A] prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness.” *In re Peterson*, 315 F.3d 1325, 1330 (Fed. Cir. 2003).

## ANALYSIS

Appellants submit specific arguments for some claims and, for others, merely point out what the claims recite while stating that the Examiner did

not address the claims nor point out in the prior art where the claimed subject matter is found. (App. Br. 6-16, Reply Br. 2-11). We address Appellants' arguments accordingly. *See* 37 C.F.R. § 41.37 (c)(1)(vii). We note, however, that 37 C.F.R. § 41.37 (c)(1)(vii) provides that “[a] statement which merely points out what a claim recites will not be considered an argument for separate patentability of the claim.” Thus, to the extent that the Appeal Brief merely points out what a claim recites, such an observation will not be considered as an argument for separate patentability.

*Claims 1-3, 5, 6, 10-15, 33, 36, and 38 Rejected as Anticipated by Shirai '196 or Takahashi*

Here, Appellants submit specific arguments to claim 1, and state that claims 12, 33, 36, and 38 were not addressed by the Examiner. (App. Br. 6-7, Reply Br. 2-3). We address the claims accordingly.

Claim 1.

Appellants do not dispute the Examiner's findings that Shirai '196 or Takahashi individually describes a color forming composition comprising a polymer matrix, an activator of aromatic sulfonylurea, and isobenzofuranone color former. (FF 1, 2; App. Br. 6-7; Reply Br. 2-3). Rather, Appellants argue that neither Shirai '196 nor Takahashi discloses “the claimed radiation antenna which ‘renders said color forming composition reactive to form colors when exposed to radiation of a specific wavelength,’” and that “the color forming composition would *not* so respond to that wavelength absent the antenna.” (App. Br. 6, ll. 12-17). Appellants contend that the “concept of a radiation antenna that renders the composition responsive to form color when exposed to a specific wavelength is unknown in the prior art of Shirai

and Takahashi.” (Reply Br. 2, ll. 27-29). Furthermore, Appellants argue that the prior art does not state the pigments would “absorb radiation of a specific wavelength in such a way or to a sufficient degree to render a composition, that was previously non-reactive, now reactive to form colors.” (Reply Br. 3, ll. 4-6).

In their Specification, Appellants disclose a wide variety of compounds that function as radiation antenna in the inventive color forming compositions, and do not state what properties are important in selecting compounds to function as antennae. (Spec. ¶¶ 0028-0032). Appellants do state, however, that ferric oxide, “or the like,” makes a suitable antenna in the inventive color forming composition. (FF 3). From the record, it would appear to one of ordinary skill in the art that any compound “like” ferric oxide would work as an antenna to absorb radiation at some wavelength and sufficient energy level to render the color forming composition reactive. The prior art discloses titanium dioxide and zinc oxide pigments included in color forming compositions. (FF 4). The Examiner recognized these compounds’ similarity to Appellants’ disclosed ferric oxide antenna, finding Shirai ‘196 and Takahashi disclose color forming compositions containing pigments that “are inherently radiation absorbers,” (Ans. 3, ll. 14-15), and that their presence within the compositions would enable the prior art compositions to “inherently absorb radiation in some wavelength from uv to infrared.” (Ans. 4, ll. 6-8). Given the prior art’s disclosure of compounds like those disclosed by Appellants for radiation antenna, we agree with the Examiner that the prior art compounds would reasonably appear to possess like characteristics, and function as antenna in the prior art color forming

compositions. *In re Spada*, 911 F.2d at 708; *In re Best*, 562 F.2d at 1255. Here, Appellants have not directed us to any evidence to the contrary.

Moreover, the claimed composition does not specify what wavelength value or energy level is required to render the composition reactive. It reasonably appears that the prior art compounds would absorb radiation as do Appellants' disclosed compounds, to render the color forming composition reactive at some wavelength and energy level. Appellants have not directed us to any evidence to show that the prior art metal oxides, or any pigments, would not work to absorb radiation at any wavelength to render the color forming compositions reactive to form colors, and thus fail to satisfy their burden. *Best*, 562 F.2d at 1255 (“[T]he burden of proof [is on Appellants] . . . and its fairness is evidenced by the PTO's inability to manufacture products or to obtain and compare prior art products.”). For these reasons we find that Appellants have not rebutted the Examiner's finding that the claims are anticipated by Shirai '196 or Takahashi.

Claims 12, 33, 36, and 38.

Appellants do not submit specific arguments in support of the patentability of claims 12, 33, 36, and 38. Rather, Appellants state that the Examiner failed to address the claims and did not indicate where the claimed subject matter is taught in the prior art. (App. Br. 6, l. 21 through 7, l. 17). Appellants' unsupported statements do not have merit.

The Examiner determined that Shirai '196 and Takahashi disclose the subject matter of claims 12, 33, 36, and 38. (Ans. 6-7). Regarding the melting aid recited in claims 12 and 38, the Examiner determined that:

Takahashi et al. ( col. 14, lines 36-44 ; col. 75, lines 22-30 ), Shirai et al.'196 ( paragraphs 102-104 ) and Nishioka et al. ( col. 21, lines 9-30 ) disclose heat fusible substances or

sensitizing agents and waxes that would melt at low temperatures and inherently aid melting. Melting aids in appellants' specification ( page 12, section 35 ) are solid compounds that melt at 50-150 degrees C and include terphenyl and benzyl biphenyl which are set forth in Takahashi et al. and Shirai et al.'196 as heat fusible or sensitizer compounds. Nishioka et al. discloses benzyl biphenyl and dibenzyl oxalate sensitizers, and Gore et al. ( examples ) discloses dibenzyl oxalate ( melting point about 85 degrees C).

(Ans. 7, ll. 7-15; FF 5). Regarding the subject matter of claim 33, the Examiner found that inorganic compounds disclosed by Shirai '196 and Takahashi would reasonably appear to function as radiation antennae. Finally, the Examiner determined that the specific wavelength corresponding to a laser wavelength of an optical disc, as claimed in claim 36, is disclosed in the prior art because “[t]he specific wavelength [in Appellants’ claim]. . . may be any wavelength of radiation.” (Ans. 6, ll. 18-20).

In view of Appellants’ bare statements and lack of persuasive arguments concerning the Examiner’s findings, we find that Appellants failed to rebut the Examiner’s rejection.

*Claims 1-3, 5, 6, 10-15, 23-31, 33, and 36-38 Rejected as Anticipated, or Alternatively, as Obvious in View of Nishioka*

In addressing claims 1, 23, 36, and 37, Appellants submit arguments in support of patentability. With respect to claims 12, 33, and 38, Appellants merely state the claimed subject matter was not addressed by the Examiner. (App. Br. 6-7, Reply Br. 2-3). We address the claims accordingly.

Anticipation of Claims 1 and 23.

Appellants contest the rejections of claims 1 and 23 “for the same reasons . . . with respect to the rejections under either Shirai ‘196 or Takahashi,” and contend that Nishioka “fails to teach or suggest the claimed radiation antenna which ‘renders said color forming composition reactive to form colors when exposed to radiation of a specific wavelength.’” (App. Br. 8, ll. 3-5; 9, ll. 1-4; Reply Br. 3, ll. 10-16; 3, l. 17 through 4, l. 9).

Similar to the Examiner’s findings with respect to Shirai ‘196 and Takahashi, the Examiner found that Nishioka discloses “pigments that would inherently absorb radiation,” including zinc oxide and titanium oxide, which are both “like” Appellants’ disclosed ferric oxide (Ans. 4, ll. 11-15; FF 3, 4). As discussed above with respect to claim 1, we agree with the Examiner and find Appellants have not shown the Examiner erred in finding the subject matter of claims 1 and 23 anticipated by Nishioka.

Anticipation of Claims 12, 33, and 38.

Appellants do not submit specific arguments in support of the patentability of claims 12, 33, and 38. Rather, Appellants state that the Examiner failed to address the claims and did not indicate where the claimed subject matter is taught or suggested in the prior art. (App. Br. 8, ll. 6-12; 9, ll. 13-17; 10, ll. 6-10; Reply Br. 5, ll. 10-14). Appellants’ unsupported statements do not have merit.

The Examiner found Nishioka teaches the subject matter of claim 12 (a melting aid), claim 33 (an inorganic compound antenna), and claim 38 (an aromatic hydrocarbon melting aid). (Ans. 4, ll. 9-17; 6, ll. 8-14; 7, ll. 8-15; FF 4, 6).

Appellants’ bare statements, without any meaningful discussion or explanation, fail to rebut the Examiner’s findings.

Anticipation of Claim 36.

Appellants state that Nishioka “clearly fails to teach or suggest the claimed composition with a radiation antenna tuned to render the composition reactive to form colors when exposed specifically to radiation having a wavelength that corresponds to the wavelength of a laser of an optical disc drive.” (Reply Br. 5, ll. 5-8). We find Appellants’ statement unpersuasive to show the Examiner erred in finding the claim anticipated by the prior art.

Appellants’ Specification describes a media processing system that “allows a user, among other things, to expose a radiation image-able surface with coatings of the present exemplary compositions, register an image on the coatings, and use the imaged object for a variety of purposes.” (Spec. ¶ 0015). The media processing system includes a radiation generating device controlled by a processor and includes at least one laser with wavelengths varying between approximately 200 nm to 1200 nm. (Spec. ¶¶ 0016, 0019). Appellants further state that the radiation image-able composition can include radiation antenna comprising ferric oxide, “or the like,” within the color forming composition. (FF 3). For reasons as discussed above, Nishioka’s disclosed zinc oxide and titanium dioxide (FF 4), would reasonably appear to function as a radiation antenna in the prior art color forming compositions like ferric oxide does in Appellants’ invention. Appellants have not directed us to any evidence to show that such like compounds are not encompassed by the claimed subject matter (i.e., rendering the claimed composition reactive with optical disc drive laser wavelengths). Accordingly, Appellants have not shown that the Examiner erred in finding claim 36 anticipated by Nishioka.

Anticipation of Claim 37.

The Examiner found that Nishioka discloses compositions exposed to lasers or infrared radiation and that they “would inherently absorb radiation in the red (i.e. 600-700) and/or infrared (i.e. 700 nm and over) regions to some extent.” (Ans. 6, ll. 20-22).

Appellants contend that “claim 37 does state that the antenna of claim 1 renders the composition reactive to form colors when exposed to radiation of about 600 nm to 720 nm,” and that “Nishioka clearly fails to teach or suggest the claimed composition with *a radiation antenna tuned* to render the composition reactive to form colors when exposed specifically to radiation having a wavelength of about 600 nm to 720 nm.” (Emphasis added. Reply Br. 4, ll. 16-22). We agree with Appellants.

The claimed subject matter requires the antenna to absorb radiation “of about 600 nm to 720 nm” to render the color forming composition reactive. Appellants’ Specification lists various compounds that are examples of radiation antennae optimized for use in this wavelength range. (Spec. ¶ 0029). However, the Examiner does not rely on any reasoning that Nishioka discloses any similar compounds to these listed compounds. Furthermore, even if the Examiner is correct that some radiation would be absorbed in this wavelength range, no reasoning is provided to explain how the absorbed radiation would be at a sufficient level to render the composition reactive. For these reasons, we hold that the Examiner has not established a prima facie case of anticipation with respect to claim 37.

Obviousness of Claim 37.

The Examiner does not rely on any argument or evidence to support an obviousness rejection of the claimed subject matter in view of Nishioka. (Ans. 3-8).

As instructed by our reviewing court, there must be some reasoning of relevant evidence to support a conclusion of obviousness. *In re Kahn*, 441 F.3d at 988 (“[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness”). Here, the Examiner has not provided any reasoning how or why one of ordinary skill in the art would have modified the prior art color forming composition to contain an antenna tuned to render the composition reactive to form colors at a wavelength of about 600-720 nm. Therefore, we cannot sustain the Examiner’s obviousness rejection of claim 37 in view of Nishioka.

Obviousness of Claims 1, 12, 23, 33, 36, and 38.

In view of our determination that the Examiner correctly rejected claims 1, 12, 23, 33, 36, and 38 under 35 U.S.C. § 102, the rejections under 103 are upheld. *In re Fracalossi*, 681 F.2d at 794 (“[E]vidence establishing lack of all novelty in the claimed invention necessarily evidences obviousness”).

*Claims 1-38 Rejected as Obvious in View of Gore, Iwasaki, Shirai ‘196, Nishioka, and Shirai ‘528*

Claims 1 and 23.

Appellants do not dispute the Examiner’s findings that Gore teaches every limitation of claims 1 and 23 except for the aromatic sulfonylurea

activators of the claimed composition. (App. Br. 10-15; Reply Br. 5-11; Ans. 4, l. 20 through 5, l. 5; FF 7, 8, 9). Rather, Appellants argue that, because the principle of operation of Gore changes when combining the teachings of the disparate prior art, “it is prima facie non-obvious to suggest completely changing the chemistry taught by Gore in favor of a different chemistry taught by the other cited references.” (Reply Br. 8, ll. 12-19). Also, Appellants contend that “the scope and content of the prior art did not include the combination recited in claim 1 of a color forming composition in which a radiation antenna is used in combination with ‘an activator comprising aromatic sulfonylurea.’” (Reply Br. 7, ll. 22-25). Furthermore, Appellants contend that a prima facie case of obviousness cannot be established “without some reason in the references to combine the cited prior art teachings, with some rational underpinnings for such a reason.” (Reply Br. 7, ll. 6-9). We do not find Appellants’ arguments persuasive.

The dispositive question before us is whether it would have been obvious to one of ordinary skill in the art to substitute an aromatic sulfonylurea activator for Gore’s phenol activator, to obtain the claimed color forming composition.

As instructed by *KSR*, “when a patent claims a structure already known in the prior art that is altered by the mere substitution of one element for another known in the field, the combination must do more than yield a predictable result.” *KSR*, 127 S.Ct. at 1740.

Gore discloses a color forming composition comprising “an antenna, a color former and an activator, all dispersed in a matrix.” (FF 7). Gore also discloses that “[a]ctivators may include, *without limitation*, proton donors and phenolic compounds such as bisphenol-A and bisphenol-S,” and that

these activators are used with color formers “includ[ing], *without limitation*, leuco dyes such as fluoran leuco dyes and phthalide color formers.” (FF 9). The Examiner recognizes that one of ordinary skill in the art would have understood Gore’s disclosure to select activators *without limitation* as an invitation to look to other activators known in the prior art to improve characteristics of the color forming compositions. (Ans. 7, l. 19 through 8, l. 1). Significantly, Shirai ‘528 states that thermosensitive recording materials had a problem of color erasure over time, but that this problem could be overcome, to obtain “extremely high storage stability of recorded images,” by using aromatic sulfonylurea activators instead of phenol activators. (FF 10, 11). Therefore, one of ordinary skill in the art, concerned with the stability of recorded images, would have been motivated by the prior art teachings to change the chemistry of Gore, substituting aromatic sulfonylurea activators for phenol activators, thus arriving at Appellants’ claimed subject matter.

Appellants also argue that “Gore et al. first disclosed the idea of the radiation antenna,” and as “one skilled in the art, had not at that time found it obvious to use the radiation antenna in combination with ‘an activator comprising aromatic sulfonylurea.’” (Reply Br. 8, ll. 1-5). Appellants’ argument fails because it assumes that a reference, in this case an application for patent (which later publishes), must list every obvious variation of the disclosed subject matter; such a list is not required. Appellants do not direct us to any persuasive argument or evidence of nonobviousness.

For these reasons we find that Appellants have not shown the Examiner erred in determining claims 1 and 23 obvious in view of the prior art.

Claim 16.

Appellants argue that Gore “fails to teach or suggest ‘dissolving an aromatic sulfonyl urea activator species in said radiation-curable matrix,’” and “‘dissolving an *isobenzofuranone color former* in said radiation-curable matrix.” (Emphasis added. Reply Br. 9, ll. 12-19). Specifically, Appellants contend that the Examiner recognizes that “Gore fails to teach or suggest the claimed ‘activator comprising aromatic sulfonylurea,’” and that “Gore teaches that ‘the color former comprises at least one compound chosen from the group consisting of a leuco dye and a phthalide dye.’ (Gore, claim 2)” (*Id.*). In addition, Appellants again argue that it would not have been obvious to change the chemistry taught by Gore, and that by changing the principle of operation of Gore’s invention, when combining with the prior art, the claims are not prima facie obvious. (*Id.* 9, l. 20 through 10, l. 4). Again, we find Appellants’ arguments unpersuasive.

As discussed above, it would have been obvious to one of ordinary skill in the art to follow the straightforward teachings of the prior art to change the chemistry of Gore by substituting aromatic sulfonylurea activators for phenol activators in the color forming composition to obtain an extremely stable image.

Appellants’ argument that Gore discloses a leuco dye and phthalide dye instead of the claimed isobenzofuranone does not fully acknowledge Gore’s disclosure. Gore specifically discloses the color forming composition may comprise a *fluoran* leuco dye. (FF 8). The Examiner found that the disclosure of *fluoran* leuco dyes would have suggested to one of ordinary skill in the art the claimed isobenzofuranone. (Ans. 4, l. 22 through 5, l. 5). Appellants do not persuasively argue, or direct us to

evidence, why this finding is in error. (App. Br. 12, l. 8 through 13, l. 20; Reply Br. 9, l. 1 through 10, l. 4). Accordingly, Appellants have not shown that the Examiner erred in determining claim 16 obvious in view of the prior art.

Claims 12 and 33-38.

Appellants do not submit specific arguments in support of the patentability of claims 12 and 33-38. Rather, Appellants merely state that the Examiner failed to address the claims and did not indicate where the claimed subject matter is taught or suggested in the prior art. (App. Br. 12, ll. 1-7; 14, l. 8 through 15; Reply Br. 10, l. 14 through 11, l. 3). Appellants' unsupported statements do not have merit.

As discussed above, the Examiner found Shirai '196 and Nishioka disclose the claimed subject matter of claims 12 and 38 (an aromatic hydrocarbon melting aid), claim 33 (the antenna comprising an inorganic antenna), and claim 36 (a wavelength of an optical disc drive laser). (Ans. 4, ll. 9-17; 6, l. 7 through 7, l. 15; FF 4, 5, 6).

Furthermore, Gore discloses the claimed subject matter of claim 34 ("said antenna comprises an inindolium<sup>3</sup> compound") and claim 35 ("said antenna comprises . . . a phthalocyanine dye"). (FF 12, 13, 14, 15). Gore also discloses that energy used to cause the reaction between the activator and color forming material "may vary depending upon the equipment available, ambient conditions, and desired result. Examples of energy which may be used include IR radiation, UV radiation, x-rays, or visible light." (¶

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<sup>3</sup> Though "inindolium" is recited in the claim, the antenna material is described as "indolium" in the Specification. (Spec. ¶ 0028). The Specification does not describe "inindolium" material.

0011). Thus, Gore's disclosed wavelengths encompass the claimed wavelengths of claim 37 (i.e., "wavelength is in a range from about 600 nm to about 720 nm"). Appellants do not direct us to any evidence that this claimed wavelength range gives any unexpected results. Therefore, we find that one of ordinary skill in the art would have understood the claimed wavelength obvious in view of the prior art. *In re Peterson*, 315 F.3d at 1330 ("We therefore conclude that a prior art reference that discloses a range encompassing a somewhat narrower claimed range is sufficient to establish a *prima facie* case of obviousness").

As before, in view of Appellants' bare statements and lack of arguments concerning the Examiner's findings, we find that Appellants failed to rebut the Examiner's determination that the subject matter of claims 12 and 33-38 would have been obvious in view of the prior art.

## CONCLUSION

In view of the above discussion, Appellants have failed to show the Examiner reversibly erred in determining claims 1-3, 5, 6, 10-15, 33, 36, and 38 anticipated by Shirai '196 or Takahashi, or claims 1-3, 5, 6, 10-15, 23-31, 33, 36, and 38 anticipated by, or alternatively obvious over, Nishioka. However, we reverse the rejection of claim 37 made under 35 U.S.C. § 102(b) as anticipated by, or alternatively, under 35 U.S.C. § 103(a) as obvious in view of Nishioka.

Appellants have also failed to show that the Examiner reversibly erred in concluding that one of ordinary skill in the art would have found the subject matter of appealed claims 1-38 obvious in view of the combined teachings of Gore, Iwasaki, Shirai '196, Nishioka, and Shirai '528.

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Accordingly, the decision of the Examiner to reject all 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

PL initials  
sld

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