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A. STATEMENT OF THE CASE


We have jurisdiction under 35 U.S.C. § 6(b).  

We AFFIRM.

1 Appellants identify the real parties in interest as Naoko Manabe, the first named inventor, and JNC Corporation. Appeal Brief (Appeal Br.) 1, filed May 17, 2017.

The subject matter on appeal relates to liquid crystal compositions (see, e.g., claim 1). The Inventors disclose liquid crystal compositions having at least one of the following: a high maximum temperature nematic phase, a low minimum temperature for the nematic phase, a small viscosity, a suitable optical anisotropy, a large negative dielectric anisotropy, a high specific resistance, a high stability to ultraviolet light, and a high stability to heat. Spec. ¶ 10. The Inventors state a further aim is for the liquid crystal compositions to have at least two of these characteristics. Id. To achieve these aims, the Inventors disclose a liquid crystal composition having a negative dielectric anisotropy containing at least one compound selected from a group represented by a first formula as a first component, at least one compound selected from a group consisting of compounds represented by a second formula as a second component, and at least one compound selected from a group consisting of compounds representing by a third formula as a third component. Id. ¶ 11. These formulas are set forth in independent claim 1, which is representative of the issues on appeal and is reproduced below from the Claims Appendix of the Appeal Brief.

1. A liquid crystal composition that has a negative dielectric anisotropy and contains at least one compound selected from the group consisting of compounds represented by formula (1) as a first component, at least one compound selected from the group consisting of compounds represented by formula (2) as a second component, and at least one compound selected from the group consisting of compounds represented by formula (3) as a third component, and a ratio of the first component is in the range of 3% by weight to 30% by weight based on the weight of the liquid crystal composition:
wherein, in formula (1) to formula (3), \( R_1, R_2, R_3, R_4, R_5 \) and \( R_6 \) are independently alkyl having 1 to 12 carbons, alkoxy having 1 to 12 carbons, alkenyl having 2 to 12 carbons or alkenyloxy having 2 to 12 carbons; ring \( A \) and ring \( B \) are independently 1,4-cyclohexylene, 1,4-phenylene or tetrahydropyran-2,5-diyl; \( X_1 \) and \( X_2 \) are independently hydrogen, fluorine or chlorine; \( X_3 \) and \( X_4 \) are independently fluorine or chlorine; \( Z_1 \) is a single bond, \(-\text{CH}_2\text{CH}_2-, -\text{CH}_2\text{O}, -\text{OCH}_2-, -\text{COO} \) or \(-\text{OCO}-\); \( a \) and \( c \) are independently 0 or 1; \( b \) is 0, 1 or 2; and a sum of \( b \) and \( c \) is 0, 1 or 2.

REJECTIONS ON APPEAL

I. Claims 1–10, 16, 17, and 19 under 35 U.S.C. § 103 as being unpatentable over Matsumoto\(^3\) in view of Masukawa;\(^4\)

II. Claims 12–15 as being unpatentable under 35 U.S.C. § 103 over Matsumoto in view of Masukawa and further in view of Bernatz;\(^5\)

III. Claims 1–20 under 35 U.S.C. § 103 as being

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\(^3\) Matsumoto et al., US 2006/0163536 A1, published July 27, 2006 (‘‘Matsumoto’’).


\(^5\) Bernatz et al., US 2009/0103011 A1, published Apr. 23, 2009 (‘‘Bernatz’’).
unpatentable over Klasen-Memmer in view of Masukawa;

IV. Claims 1–17 and 19 under 35 U.S.C. § 103 as being unpatentable over Takeuchi in view of Masukawa; and

V. Claims 18 and 20 under 35 U.S.C. § 103 as being unpatentable over Takeuchi in view of Masukawa and further in view of Bernatz.

B. DISCUSSION

Rejection I

Claims 1–10, 16, 17, and 19 under 35 U.S.C. § 103 are rejected as being unpatentable over Matsumoto in view of Masukawa.

Citing a compound included in Matsumoto’s example 20, the Examiner finds Matsumoto discloses a liquid composition having a negative dielectric anisotropy and including a compound present in an amount of 11 wt% that is equivalent to formula (1) of claim 1. Ans. 2–3. The Examiner finds the composition does not include compounds equivalent to formulas (2) or (3) of claim 1 but finds Matsumoto discloses another compound equivalent to formula (3) of claim 1. Id. at 3–4.


The Examiner finds Masukawa discloses a liquid crystal composition including a compound (formula (7-7)) that is also equivalent to formula (3) of claim 1 and that Masukawa discloses the compound affects properties of a liquid crystal composition, such as its threshold voltage or refractive index anisotropy. *Id.* at 4. The Examiner concludes it would have been obvious to combine the two embodiments of Matsumoto or the embodiment of Matsumoto with the composition of Masukawa in view of Masukawa’s teachings that the compounds equivalent to formula (3) of claim 1 adjust liquid crystal composition properties. *Id.*

The Examiner further finds Masukawa discloses a liquid crystal composition can include another compound (formula (6-5)) that is equivalent to formula (2) of claim 1 and the compound affects the threshold voltage, viscosity, or refractive index anisotropy of a liquid crystal composition. *Id.* at 4–5. The Examiner concludes it would have been obvious to further modify the composition of Matsumoto to include the additional compound to adjust the threshold voltage, viscosity, or refractive index anisotropy of the composition. *Id.* at 5.

Appellants contend Masukawa requires compounds (i.e., at least one of formulas 1–427) in addition to those cited by the Examiner and thus Masukawa requires ingredients differing from the formulae recited in claim 1. Appeal Br. 5. In view of this, Appellants argue Masukawa is fundamentally different from the claimed invention and one of ordinary skill in the art would have lacked a reason to refer to Masukawa. *Id.*

Matsumoto discloses a liquid crystal composition having a negative dielectric anisotropy that is useful for liquid crystal display elements of a vertical alignment mode, IPS mode, or the like. Matsumoto ¶¶ 1, 9, 12.
Matsumoto discloses the composition can include a compound meeting Matsumoto’s formula (1) and a compound meeting Matsumoto’s formula (2), such as formula 2-4, which encompasses the compound present in 11 wt% in Matsumoto’s Example 20 that the Examiner cites as being equivalent to formula (1) of claim 1. Id. ¶¶ 49, 58, 181. Thus, Matsumoto’s disclosure supports the Examiner’s findings regarding Matsumoto.

Masukawa discloses a liquid crystal composition having a negative electric anisotropy that “should include” a compound represented by Masukawa’s formula (1) (i.e., component A) as well as at least one compound selected from the formulas for component B, at least one compound selected from the formulas for component C, and/or at least one compound selected from the formulas for component D, with component E as an additional compound that may be added. Masukawa ¶¶ 2, 121–122. According to Masukawa, component D includes, among other formulas, formulas (6) and (7); examples of formula (6) include formula (6-5) (i.e., the formula cited by the Examiner as corresponding to formula (2) of claim 1); and examples of formula (7) include formula (7-7) (i.e., the formula cited by the Examiner as corresponding to formula (3) of claim 1). Id. ¶ 130. Therefore, Masukawa’s disclosure also supports the Examiner’s findings.

In other words, Masukawa suggests that its compounds may be combined and that more than one compound of a particular component can be added to the first component (e.g., at least one of the compounds for component D can be added to component A). To the extent Masukawa’s component A is required in a composition, we agree with the Examiner that the recitation of “contains” in claim 1 is open and permits the inclusion of additional elements, such as additional liquid crystal components. Ans. 17.
We further note that Masukawa discloses component A has a content of 1–99 wt%, which suggests that component A may be present in a small amount. Id. ¶ 121. Moreover, Masukawa discloses that the composition has excellent compatibility with other liquid crystal materials, has a low viscosity, and is suitable for use in liquid crystal components that use various modes, such as an IPS mode. Id. ¶ 120. Thus, Masukawa suggests its composition is suitable for the same use as Matsumoto’s composition and Masukawa’s composition may be used with other compositions (e.g., Matsumoto’s composition).

As a result, Masukawa’s disclosure not only suggests combining multiple compounds of component D (e.g., formula (7-7) and formula (6-5)) in a liquid crystal composition (e.g., Matsumoto’s composition), it also would have provided a reason for one of ordinary skill to do so in view of Matsukawa’s teachings that the compounds affect various properties of such compositions.

Appellants also argue Masukawa does not disclose specific amounts for formulas 6-5 and 7-7. Appeal Br. 5–6. This argument is unpersuasive because claim 1 does not recite amounts for the second and third components (i.e., the components of claim 1 the Examiner cites as being equivalent to formula (6-5) and formula (7-7)). Nonetheless, we note that Masukawa generally discloses that as the content of component D is increased, the threshold voltage of a liquid crystal composition decreases and viscosity increases. Masukawa ¶ 131. With regard to specific formulas encompassed by component D, Masukawa teaches formula (6) compounds adjust the composition’s threshold voltage, its viscosity, or adjust the refractive index anisotropy and formula (7) compounds increase the
composition’s clearing point, the temperature range of the composition’s nematic phase, decrease the composition’s threshold voltage, or increase the composition’s refractive index anisotropy.\(^8\) Id. ¶ 132. Masukawa further discloses that the content of component D is preferably 40 wt% or more. Id. ¶ 133.

Appellants assert that “Masukawa teaches a laundry list of compounds (over hundreds of compounds taking in all possible compounds that may be represented by the mentioned formulas (6)-(8), (10)-(14) etc.) that may be effective in adjusting threshold voltage, viscosity, or refractive index anisotropy etc..” Masukawa does not disclose a finite number of possible compounds, and there would have been no reason to select a particular compound without relying upon impermissible hindsight. Appeal Br. 8–9; Reply Br. 4–7. In view of this, Appellants argue the Examiner has made an impermissible “obvious to try” rejection. Appeal Br. 9–10; Reply Br. 6.

Appellants’ arguments are unpersuasive. In a determination of obviousness, a reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art. *Merck & Co. v. Biocraft Labs.*, 874 F.2d 804, 807 (Fed. Cir. 1989) (“That the [prior art] patent discloses a multitude of effective combinations does not render any particular formulation less obvious.”). As described above, Masukawa discloses a liquid crystal composition may include a mixture of components

\(^8\) To the extent the Examiner erred by stating formula (7) adjusts viscosity (Ans. 4), we deem this harmless error because the Examiner also finds formula (7) is effective to adjust the threshold voltage or the refractive index anisotropy of a composition (id.), as taught by Masukawa (Masukawa ¶ 132). Therefore, the Examiner has articulated other reasons to combine the applied references that have rational underpinnings in Masukawa’s disclosure.
(including more than one of a specific type of component), discloses formulas encompassed by each component, and further discloses specific examples for the formulas, such as formula (7-7) and formula (6-5). Masukawa further describes effects the formulas have upon a liquid crystal composition, which would have provided guidance for one of ordinary skill in the art to select one formula versus another. Thus, not only does Masukawa disclose formulas and examples of the formulas but also provides a reason to combine them with Matsumoto by describing the effects of the formulas upon a liquid crystal composition.

Appellants also argue that the claimed combination of the three claimed formulas (1)-(3) provide advantages, such as a reduced bulk viscosity, and Masukawa does not teach using compounds of the three formulas together but instead includes an additional compound (e.g., Npd1OB(2F,3F)-O₂) that contributes to a higher viscosity. Appeal Br. 7; Reply Br. 3. These arguments are unpersuasive because the combination of Matsumoto and Masukawa would have suggested the claimed composition to one of ordinary skill in the art, as described above. “[T]he test for combining references is not what the individual references themselves suggest but rather what the combination of disclosures taken as a whole would suggest to one of ordinary skill in the art.” *In re McLaughlin*, 443 F.2d 1392, 1395 (CCPA 1971); see also, *In re Gorman*, 933 F.2d 982, 986 (Fed. Cir. 1991) (the test of obviousness is “whether the teachings of the prior art, taken as a whole, would have made obvious the claimed invention.”).

Moreover, it appears that Masukawa suggests a liquid crystal composition that would include components equivalent to formulas (1)-(3)
of claim 1. As will be discussed below with regard to the § 103 rejection over Klasen-Memmer and Masukawa, the Examiner finds an exemplary formula (i.e., formula (12-4)) encompassed by component E Masukawa is equivalent to formula (1) of claim 1 and Masukawa provides a reason for using component E by describing its effects upon a liquid crystal composition. Ans. 9. As discussed above, the Examiner finds Masukawa discloses formulas corresponding to formulas (3) and (2) (i.e., formulas (7-7) and (6-5), respectively) of claim 1. Appellants do not dispute whether the cited formulas of Masukawa are equivalent to formulas (1)–(3) of claim 1. Moreover, Masukawa discloses its components (e.g., components D and E) may be combined in a liquid crystal composition and that more than one of a given component can be used. Masukawa ¶¶ 121–122.

In addition, Appellants contend Masukawa’s compositions exhibit bulk viscosities significantly larger than those exhibited by the claimed invention. Appeal Br. 6. Appellants cite a Declaration under 37 C.F.R. § 1.132 dated November 7, 2016 (“Declaration”) to demonstrate the compositions of Example 2 and Example 7 of Masukawa exhibit higher bulk viscosities than examples of the claimed invention and thus the claimed invention produces unexpected results. Appeal Br. 6–8; Reply Br. 3–4; Declaration ¶¶ 2–4.

A showing of unexpected results generally must be commensurate in scope with a claimed range. In re Harris, 409 F.3d 1339, 1344 (Fed. Cir. 2005) (“[T]he record does not show that the improved performance would result if the weight-percentages were varied within the claimed ranges. Even assuming that the results were unexpected, Harris needed to show results covering the scope of the claimed range.”). Here, as generally
indicated by the Examiner (Ans. 20), the results are not commensurate with the scope of claim 1, which includes a mixture of three formulas each encompassing various compounds. Further, the amounts of the compounds for the three formulas vary, with an amount recited for only the first formula (i.e., 3–30 wt%). The data in the Declaration is directed to two examples (Declaration ¶ 4 (“Comparative Example 1” and “Comparative Example 2”)) and thus presents data for only two compositions from amongst the wide array encompassed by claim 1. Therefore, the data in the Declaration is insufficient to show that the unexpected results asserted by Appellants would occur across the scope of the claimed invention.

The Declaration also does not compare the claimed invention to the closest prior art. “When unexpected results are used as evidence of nonobviousness, the results must be shown to be unexpected compared with the closest prior art.” In re Baxter Travenol Labs., 952 F.2d 388, 392 (Fed. Cir. 1991). The Declaration compares the inventive examples with Masukawa’s Composition 2 and Composition 7 (Declaration ¶ 4). Each of the latter compositions include Masukawa’s formula (7-7) but does not include formula (6-5). Masukawa ¶¶ 253, 258. As noted above, the Examiner cites both formula (7-7) and formula (6-5) of Masukawa in the rejection, not solely formula (7-7).

Furthermore, it is not enough for the Appellants to show that the asserted results for Appellants’ invention and the closest prior art differ. The difference must be shown to be an unexpected difference. See In re Freeman, 474 F.2d 1318, 1324 (CCPA 1973). The Declaration merely states Masukawa yield inferior results as compared to the claimed invention and states this is an achievement of unexpected results. Declaration ¶ 6.
This statement is conclusory in nature without corroborating evidence persuasively showing that Masukawa’s composition is patentably different from the composition of claim 1. See In re Altenpohl, 500 F.2d 1151, 1158 (CCPA 1974) (lack of factual support rendered an affidavit of little probative value in overcoming obviousness rejection); In re Klosak, 455 F.2d 1077, 1080 (CCPA 1972) (“[I]t is not enough to show that results are obtained which differ from those obtained in the prior art: that difference must be shown to be an unexpected difference.”). Indeed, the bulk viscosity for Masukawa’s Example 2 (36.8 mPa•s) is less than the bulk viscosity for Appellants’ Example 2 (41.3 mPa•s). Declaration ¶ 4. As a result, the statements in the Declaration have little probative value, especially when weighed together with the other evidence of record.

In view of the above, the Declaration is entitled to little weight. Having weighed all of the evidence before us, including the Declaration and the disclosures of the applied references, we are convinced that a preponderance of the evidence supports the conclusion that the liquid crystal composition of claim 1 would have been obvious to one of ordinary skill in the art.

Appellants state claim 1 is representative for the issues on appeal and do not present separate arguments for claims 2–10, 16, 17, and 19. Appeal Br. 5, 10.

For the reasons discussed above and those set forth in the Examiner’s Answer, we sustain the Examiner’s § 103 rejection of claims 1–10, 16, 17, and 19 over Matsumoto and Masukawa.
Rejection III

Claims 1–20 are rejected under 35 U.S.C. § 103 as being unpatentable over Klasen-Memmer in view of Masukawa.

The Examiner finds Klasen-Memmer discloses a liquid crystal composition, specifically Example M1, that has a negative dielectric anisotropy and includes compounds respectively corresponding to formulas (2) and (3) of claim 1. Ans. 8. The Examiner finds Klasen-Memmer does not disclose a compound equivalent to formula (1) of claim 1 or its amount. Id.

The Examiner finds Masukawa discloses a compound (formula (12-4)) equivalent to formula (1) of claim 1 and that the compound adjusts the viscosity and refractive index of a liquid crystal composition. Id. at 9. The Examiner concludes it would have been obvious to add Masukawa’s compound to the composition of Klasen-Memmer in view of the effects of Masukawa’s compound upon a liquid crystal composition and it would have been obvious to adjust the amount of Masukawa’s compound to obtain its optimum value as a result-effective variable. Id. at 9–10.

Appellants assert Klasen-Memmer’s composition exhibits a lower voltage holding ratio (VHR) than examples of Appellants’ composition, citing a Table included in Appellants’ Appeal Brief. Appeal Br. 11–12. This argument is unpersuasive. First, claim 1 does not require a VHR value for the claimed composition. Second, to the extent Appellants are asserting unexpected results for VHR values, such results are presented in the form of attorney argument, which does not suffice to establish unexpected results via factual evidence. See In re Geisler, 116 F.3d 1465, 1470 (Fed. Cir. 1997) (attorney argument is not the kind of factual evidence that is required to
rebut a prima facie case of obviousness); *In re De Blauwe*, 736 F.2d 699, 705 (Fed. Cir. 1984).

Appellants argue that Masukawa does not disclose a specific usage for formula (12-4) and Masukawa’s examples do not include it so it would have been impossible to evaluate the degree of adjustment for formula (12-4). Appeal Br. 11; Reply Br. 7–8. These arguments are also unpersuasive.

“[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art.” *In re Boesch*, 617 F.2d 272, 276 (CCPA 1980). Here, Masukawa discloses its component E encompasses formula (12), and thus formula (12-4), and as the content of component E increases, compositional viscosity decreases and the threshold voltage of a composition increases. Masukawa ¶¶ 134, 136. Therefore, Masukawa teaches the content of component E (e.g., formula (12-4)) is a result-effective variable and it would have been obvious to modify the amount of component E in a composition (e.g., Klasen-Memmer’s composition) to determine its workable or optimal amount to adjust the viscosity and/or threshold voltage of the composition as matter of routine experimentation and design within the level of the ordinary skill, thus arriving at a composition within the scope of claim 1. Moreover, Masukawa discloses the content of component E is preferably 30 wt% or more. *Id.* ¶ 136.

Appellants further contend Masukawa discloses a laundry list of compounds and there would have been no reason to select the compounds cited by the Examiner from amongst that list without some reason for the combination other than impermissible hindsight. Appeal Br. 13; Reply Br. 8–10. As discussed above with regard to the § 103 rejection over
Matsumoto and Masukawa, Masukawa discloses a liquid crystal composition may include a mixture of components, discloses formulas encompassed by each component, and further discloses specific examples for the formulas, such as formula (12-4). Masukawa further describes effects the formulas have upon a liquid crystal composition, which would have provided guidance for one of ordinary skill in the art to select a formula. Thus, not only does Masukawa disclose specific compounds but also provides a reason to combine them with Klasen-Memmer by describing their effects upon a liquid crystal composition.

Furthermore, as discussed above with regard to the § 103 rejection over Matsumoto and Masukawa, Masukawa discloses formulas corresponding to formulas (3) and (2) (i.e., formulas (7-7) and (6-5), respectively) of claim 1 and provides a reason to use these compounds by describing their effects upon a liquid crystal composition. Ans. 4–5. Moreover, Masukawa discloses its components (e.g., components D and E) may be combined in a liquid crystal composition and that more than one of a given component can be used. Masukawa ¶¶ 121–122. Thus, it appears that Masukawa alone suggests a liquid crystal composition that would include components equivalent to formulas (1)–(3) of claim 1 (e.g., formulas (12-4), (6-5), and (7-7) of Masukawa).

Appellants contend the composition of claim 1 provides unexpected results in comparison to Klasen-Memmer and Masukawa, citing the Declaration. Appeal Br. 11–13. The Declaration compares the maximum temperature for the nematic phase of Klasen-Memmer’s Example M1 to that of an inventive example. Declaration ¶ 5.
We have considered the Declaration but find it of little weight for the following reasons. First, as generally stated by the Examiner (Ans. 31), these results are not commensurate in scope with claim 1. The asserted data includes a single composition but claim 1 is directed to a composition including three components represented by formulas encompassing various compounds that can be present in various amounts. Thus, Appellants’ data is insufficient to demonstrate unexpected results across the scope of claim 1. Second, similar to the comparisons for the § 103 rejection over Matsumoto and Masukawa, the Declaration compares an inventive result with an example of Klasen-Memmer, states Klasen-Memmer yields inferior properties, and states the claimed invention achieves unexpected results in comparison. Declaration ¶¶ 5–6. Such statements are conclusory in nature without corroborating evidence persuasively showing that Klasen-Memmer’s composition is patentably different from the composition of claim 1.

Based on the foregoing, the Appellants’ evidence of unexpected results is entitled to little weight. A preponderance of the evidence supports the Examiner’s obviousness determination for claim 1.

Appellants state claim 1 is representative for the issues on appeal and do not present separate arguments for claims 2–20. Appeal Br. 5, 13.

For the reasons discussed above and those set forth in the Examiner’s Answer, we sustain the Examiner’s § 103 rejection of claims 1–20 over Klasen-Memmer and Masukawa.
Rejection IV

Claims 1–17 and 19 are rejected under 35 U.S.C. § 103 as being unpatentable over Takeuchi in view of Masukawa.

The Examiner finds Takeuchi discloses a liquid crystal composition, specifically Example 5, having a negative dielectric anisotropy and including a compound (3-Cy-1=1-Cy-3) in an amount of 10 wt% that is equivalent to formula (1) of claim 1 and including compounds (3-Cy-1O-Ph5-O2 and 4-Cy-Cy-1O-Ph5-O2) equivalent to formula (2) of claim 1. Ans. 11–12. The Examiner finds Takeuchi does not disclose that the composition includes a compound equivalent to formula (3) of claim 1. Id. at 12.

The Examiner finds Masukawa discloses a liquid crystal composition including a compound (i.e., formula (6-3)) equivalent to formula (3) of claim 1 and that the compound adjusts the threshold voltage, viscosity, or refractive index anisotropy of a liquid crystal composition. Id. at 12–13. The Examiner concludes it would have been obvious to add Masukawa’s compound to Takeuchi’s composition to adjust the latter’s threshold voltage, viscosity, and refractive index anisotropy. Id. at 13.

Appellants argue Masukawa does not disclose a specific usage amount for formula (6-3) and the working examples do not use formula (6-3) so it would have been impossible to evaluate the degree of adjustment for using formula (6-3). Appeal Br. 14; Reply Br. 10. This argument is unpersuasive because the Examiner finds Masukawa’s formula (6-3) is equivalent to formula (3) of claim 1, which does not recite a content for that component. Further, Masukawa discloses component D encompasses formula (6), which includes formula (6-3), and that the content of
component D and formula (6) are result-effective variables. Masukawa ¶ 129–132. Therefore, it would have been obvious to one of ordinary skill in the art to modify the amount of component D, or specifically formula (6-3), in a composition (e.g., Takeuchi’s composition) to determine its workable or optimal amount to adjust the threshold voltage, viscosity, and/or the refractive index anisotropy of the composition (i.e., the effects taught by Masukawa for formula (6)) as a matter of routine experimentation and design within the level of the ordinary skill. Moreover, Masukawa discloses component D is preferably 40 wt% or more in a composition. Id. ¶ 133.

Appellants contend Masukawa fails to utilize compounds similar to formulae (1)–(3) of claim 1 simultaneously. Appeal Br. 14–15. This argument is unpersuasive because the combination of Takeuchi and Masukawa suggests the composition of claim 1. Moreover, as discussed above, Masukawa suggests the composition of claim 1 by disclosing compounds equivalent to each of formulas (1)–(3), disclosing the compounds may be used with one another, and teaching reasons for using the compounds in light of their effects upon a light crystal composition.

Appellants also argue Masukawa discloses a laundry list of compounds and there would have been no reason to select the compounds cited by the Examiner from amongst that list without some reason for the combination other than impermissible hindsight. Appeal Br. 16; Reply Br. 10–12. This argument is unpersuasive. Masukawa discloses a liquid crystal composition may include a mixture of components, discloses formulas encompassed by each component, and further discloses specific examples for the formulas, such as formula (6-3). Masukawa further describes effects the formulas have upon a liquid crystal composition, which would have
provided guidance for one of ordinary skill in the art to select a formula. Thus, not only does Masukawa disclose specific compounds but also provides a reason to combine them with Takeuchi by describing the effects of the compounds upon a liquid crystal composition.

In addition, Appellants assert unexpected results, citing the bulk viscosity results presented in the Declaration. Appeal Br. 15–16. The Declaration compares the bulk viscosities of two inventive examples to Examples 5 and 15 of Takeuchi. Declaration ¶ 6.

We have considered the Declaration but find it of little weight for the following reasons. First, as generally stated by the Examiner (Ans. 36), these results are not commensurate in scope with claim 1. The asserted data includes two inventive compositions but claim 1 is directed to a composition including three components represented by formulas encompassing various compounds that can be present in various amounts. Thus, Appellants’ data is insufficient to demonstrate unexpected results across the scope of claim 1. Second, similar to the comparisons for the § 103 rejection over Matsumoto and Masukawa, the Declaration compares an inventive result with an example of Takeuchi, states Takeuchi’s examples yield inferior properties, and states the claimed invention achieves unexpected results. Declaration ¶ 6. Such statements are conclusory in nature without corroborating evidence persuasively showing that Takeuchi’s composition is patentably different from the composition of claim 1.

Based on the foregoing, the Appellants’ evidence of unexpected results is entitled to little weight. A preponderance of the evidence supports the Examiner’s obviousness determination for claim 1.
Appellants state claim 1 is representative for the issues on appeal and do not present separate arguments for claims 2–17 and 19. Appeal Br. 5, 16.

For the reasons discussed above and those set forth in the Examiner’s Answer, we sustain the Examiner’s § 103 rejection of claims 1–17 and 19 over Takeuchi and Masukawa.

Rejections II and V

Claims 12–15 are rejected as being unpatentable under 35 U.S.C. § 103 over Matsumoto in view of Masukawa and further in view of Bernatz.

Claims 18 and 20 are rejected under 35 U.S.C. § 103 as being unpatentable over Takeuchi in view of Masukawa and further in view of Bernatz.

For the rejections of claims 12–15, 18, and 20, Appellants assert Bernatz does not remedy the deficiencies of Matsumoto and Masukawa or the deficiencies of Takeuchi and Masukawa. Id. at 10, 17. For the reasons set forth above, there are no deficiencies in the rejections of claim 1 over Matsumoto and Masukawa or over Takeuchi and Masukawa that require curing by Bernatz.

For these reasons and those set forth in the Examiner’s Answer, we sustain the Examiner’s § 103 rejections of claims 12–15, 18, and 20.

C. DECISION

The decision of the Examiner 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).
Appeal 2018-001754
Application 14/602,291

AFFIRMED