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Innovation Capital Law Group, LLP 19800 MacArthur Blvd. Suite 280 Irvine, CA 92612			CHERN, CHRISTINA	
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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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*Ex parte* CHIH-HSIEN YEH, PO-YANG SHIH, and PI-YU HSIN

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Appeal 2019-003033  
Application 14/932,220  
Technology Center 1700

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Before ROMULO H. DELMENDO, JEFFREY T. SMITH, and  
BEVERLY A. FRANKLIN, *Administrative Patent Judges*.

DELMENDO, *Administrative Patent Judge*.

DECISION ON APPEAL

The Appellant<sup>1</sup> appeals under 35 U.S.C. § 134(a) from the Primary Examiner's final decision to reject claims 1–13.<sup>2</sup> We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

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<sup>1</sup> We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42—namely, Giga Solar Materials Corp. (Application Data Sheet filed November 4, 2015 at 5), which is also identified as the real party in interest (Appeal Brief (without track changes) filed June 1, 2018 (“Appeal Br.”) at 4).

<sup>2</sup> *See* Appeal Br. 11–18; Final Office Action entered January 23, 2018 (“Final Act.”) at 3–20; Examiner's Answer entered September 5, 2018 (“Ans.”) at 3–9.

## I. BACKGROUND

The subject matter on appeal relates to a conductive paste, which may be used in solar or photovoltaic cells (Specification filed November 4, 2015 (“Spec.”) 1, l. 5–2, l. 13). Representative claim 1 is reproduced from the Claims Appendix to the Appeal Brief, as follows:

1. A conductive paste comprising:
  - (a) about 85% to about 99.5% by weight of a conductive metal or the derivative thereof, based on the weight of solids;
  - (b) about 0.5% to about 15% by weight of a lead-free glass frit containing tellurium-bismuth-zinc-tungsten-*selenium-oxide*, based on the weight of solids; and
  - (c) an organic vehicle;wherein the weight of solids is the total weight of the conductive metal (a) and the lead-free glass frit (b);  
wherein tellurium oxide is present in an amount of about 55 wt.% to about 90 wt.%, bismuth oxide is present in an amount of about 0.1 wt. % to about 15 wt. %, zinc oxide is present 15 in an amount of about 0.1 wt.% to about 15 wt.%, tungsten oxide is present in an amount of about 0.1 wt.% to about 15 wt.% and selenium oxide is present in an amount of about 0.1 to about 10 wt.% in the lead-free glass frit.

(Appeal Br. 19 (emphasis added)).

## II. REJECTIONS ON APPEAL

The claims on appeal stand rejected under 35 U.S.C. § 103, as follows:

- A. Claims 1–10 as unpatentable over Park et al.<sup>3</sup> (“Park”) and

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<sup>3</sup> WO 2014/126293 A1, published August 21, 2014. The Examiner relies on US 2016/0013331 A1, published January 14, 2016 as an English language equivalent of this reference (Final Act. 3), and the Appellant does not object (Appeal Br. 14). Therefore, our citations to Park are also to the United States document.

Schulz et al.<sup>4</sup> (“Schulz”); and

B. Claims 11–13 as unpatentable over Park, Schulz, and Carroll et al.<sup>5</sup> (“Carroll”).  
(Ans. 3–9; Final Act. 3–20).

### III. DISCUSSION

The Appellant’s arguments focus primarily on claim 1 (Appeal Br. 11–15). In addition, the Appellant provides additional comments or arguments under separate sub-headings for claims 2–4. Therefore, we address claims 2–4 individually to the extent these claims are separately argued within the meaning of 37 C.F.R. § 41.37(c)(1)(iv). Otherwise, all claims on appeal stand or fall with claim 1, which we select as representative.

Having fully considered the Appellant’s arguments, we find that these arguments fail to identify reversible error in the Examiner’s rejection as maintained against claim 1. *In re Jung*, 637 F.3d 1356, 1365 (Fed. Cir. 2011).

Because we discern no reversible error in the Examiner’s factual findings, analysis, and conclusion, we adopt them as our own. We add the following for emphasis only.

The Appellant’s principal argument is that Schulz cannot be combined with Park because Schulz teaches away from claim 1’s subject matter (Appeal Br. 11). Specifically, the Appellant argues that while claim 1 requires selenium oxide as one of the oxides in a lead-free glass frit, “Schulz

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<sup>4</sup> US 2014/0048116 A1, published February 20, 2014.

<sup>5</sup> US 2011/0308597 A1, published December 22, 2011.

is totally silent in disclosing or teaching the possibility of using a lead-free glass” and that Schulz’s inventive feature resides in the addition of salts (*id.*). This argument has no persuasive merit. The Appellant does not direct us to any description in Schulz *itself* that indicates that Schulz’s electro-conductive paste *must* comprise lead (Schulz ¶¶ 9–13). Indeed, as the Examiner correctly points out (Ans. 3), Schulz merely lists lead (Pb) as a preferred element in the paste but does not require it (*id.* ¶ 82). In any event, Park teaches that lead-free glass frits are advantageous because such frits provide excellent adhesive strength (Park ¶ 36). *In re Keller*, 642 F.2d 413, 426 (CCPA 1981) (“[O]ne cannot show non-obviousness by attacking references individually where, as here, the rejections are based on combinations of references.”).

The Appellant alleges that the art of conductive pastes is “very unpredictable” (Appeal Br. 11). That allegation is unsupported by persuasive objective evidence and is directly refuted by the Inventors’ own Specification (e.g., Spec. 3, ll. 11–20 (disclosing a wide variety of elements as suitable) and the prior art disclosures (e.g., Park ¶¶ 32–35; Schulz ¶ 82 (disclosing a wide variety of elements)). *Cf. Regents of the Univ. California v. Broad Institute, Inc.*, 903 F.3d 1286, 1295 (Fed. Cir. 2018) (approving the Board’s position that “[s]pecific instructions that are relevant to the claimed subject matter or success in similar methods or products have directed findings of a reasonable expectation of success.”) (internal citation omitted).

The Appellant argues that the “laundry list” in Schulz’s possible components in the glass frit include over two billion possibilities, one of which includes selenium oxide, and urges *In re Baird*, 16 F.3d 380, 382–83

(Fed. Cir. 1994) is controlling (Appeal Br. 12). Even if the Appellant’s calculated number (two billion) is correct, we find no persuasive merit in the Appellant’s position. In *Baird*, the claim at issue recited a bisphenol A polyester containing an aliphatic dicarboxylic acid selected from the group consisting of succinic acid, glutaric acid, and adipic acid. *Id.* at 381. The prior art reference, Knapp, disclosed a generic diphenolic formula containing a large number of variables encompassing more than 100 million different diphenols, only one of which was a bisphenol A. *Id.* at 382. None of the preferred diphenols included bisphenol A, and Knapp actually indicated a “preference leading away” from the claimed compounds. *Id.* at 383.

In stark contrast, Schulz explicitly teaches selenium oxides as *preferred* group VI oxides that may be used together with tellurium oxides (Schulz ¶ 82). The fact that Schulz’s working examples exemplify other compounds does not negate Schulz’s explicit teaching regarding selenium oxides as preferred materials. Moreover, unlike the situation in *Baird*, we are not directed to any disclosure in Schulz indicating a “leading away” or teaching away that selenium oxides would be unsuitable for Schulz’s purpose. *In re Urbanski*, 809 F.3d 1237, 1244 (Fed. Cir. 2016) (“Nothing in the prior art teaches that the proposed modification would have resulted in an ‘inoperable’ process or a dietary fiber product with undesirable properties.”).

The Appellant also argues that Schulz and Park are non-analogous but fail to present any analysis that is in accordance with the case law.<sup>6</sup> We decline to undertake such an analysis on our own.

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<sup>6</sup> Two separate tests for determining whether a prior art reference is analogous are, as follows: (i) whether the art is from the same field of

Lastly, the Appellant’s argument that unexpected results are demonstrated in Examples G1, G2, G5, and G12 (Spec. 9 (Table 1)) is also unpersuasive. The Appellant does not explain how and why these examples constitute a fair comparison against the closest prior art, which is Park, showing that the novel features of claim 1, while holding all other variables constant, provide unexpectedly improved results that are commensurate in scope with claim 1.

Regarding claims 2–4, the Appellant’s skeletal arguments fail to reveal any reversible error in the Examiner’s findings, analyses, and conclusions. *In re Lovin*, 652 F.3d 1349, 1356–57 (Fed. Cir. 2011).

For these reasons, and those well-stated by the Examiner, we uphold the Examiner’s rejections.

#### IV. CONCLUSION

In summary:

<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/ Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
1–10	103	Park, Schulz	1–10	
11–13	103	Park, Schulz, Carroll	11–13	

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endeavor, regardless of the problem addressed; and (ii) if the reference is not within the inventor’s field of endeavor, whether the reference is reasonably pertinent to the particular problem with which the inventor is involved. *In re Clay*, 966 F.2d 656, 658–59 (Fed. Cir. 1992). *See In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004) (reference describing a toothbrush found to be in the same field of endeavor as a claim to a hairbrush based on findings regarding function and structural similarity); *In re ICON Health & Fitness, Inc.*, 496 F.3d 1374, 1380–81 (Fed. Cir. 2007) (prior art disclosing springs as part of a counterbalancing mechanism in a folding bed is reasonably pertinent to an application describing a gas spring used as part of a lift assist assembly in a claimed treadmill).

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<b>Claims Rejected</b>	<b>35 U.S.C. §</b>	<b>Reference(s)/ Basis</b>	<b>Affirmed</b>	<b>Reversed</b>
<b>Overall Outcome</b>			1-13	

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

AFFIRMED