

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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APPLE INC.,  
Petitioner,

v.

RJ TECHNOLOGY, LLC,  
Patent Owner.

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IPR2024-00597  
Patent 7,749,641 B2

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Before JON B. TORNQUIST, CHRISTOPHER M. KAISER, and  
BRIAN D. RANGE, *Administrative Patent Judges*.

TORNQUIST, *Administrative Patent Judge*

DECISION  
Granting Institution of *Inter Partes* Review  
35 U.S.C. § 314  
Granting Motion for Joinder  
35 U.S.C. § 315(c); 37 C.F.R. § 42.112(b)

## I. INTRODUCTION

Apple Inc. (“Petitioner”) filed a Petition requesting *inter partes* review of claims 1–18 of U.S. Patent No. 7,749,641 B2 (Ex. 1001, “the ’641 patent”). Paper 2 (“Pet.”). With its Petition, Petitioner filed a Motion for Joinder seeking to join as a party to *Samsung Electronics Co., Ltd. v. RJ Technology, LLC*, IPR2023-01183 (“the Samsung Proceeding”). Paper 4 (“Motion for Joinder” or “Mot. for Joinder”). RJ Technology LLC (“Patent Owner”) did not file a Preliminary Response to the Petition or an opposition to Petitioner’s Motion for Joinder.

An *inter partes* review may not be instituted “unless . . . the information presented in the petition . . . shows that there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition.” 35 U.S.C. § 314(a) (2018). Having considered the arguments and evidence presented by Petitioner, we determine that Petitioner has demonstrated a reasonable likelihood of prevailing on at least one of the challenged claims of the ’641 patent. Accordingly, we institute an *inter partes* review as to all the challenged claims of the ’641 patent on all the grounds of unpatentability set forth in the Petition. And, for the reasons set forth below, we grant Petitioner’s Motion for Joinder.

## II. BACKGROUND

### A. *Related Matters*

The parties indicate that the ’641 patent is the subject of *RJ Technology LLC v. Apple Inc.*, 8:22-cv-01874 (C.D. Cal., filed October 13, 2022), and *RJ Technology LLC v. Samsung Electronics Co., Ltd.*, 22-cv-

00401 (E.D. Tex., filed Oct. 13, 2022). Pet. 62; Paper 5, 1. The '641 patent is also at issue in IPR2023-01183 and IPR2023-01350. Pet. 62; Paper 5, 1.

*B. Real Parties in Interest*

Petitioner and Patent Owner identify themselves as the real parties in interest. Pet. 62; Paper 5, 1.

*C. The '641 patent*

The '641 patent discloses “a new method for improving capacity, average operating voltage and specific energy of a secondary lithium ion cell or battery.” Ex. 1001, code (57).

The '641 patent notes that the positive and negative electrode materials used in current secondary lithium ion batteries have high theoretical capacities, but a “lower actual utilization rate of said capacity.” *Id.* at 1:36–40. According to the '641 patent, the lower utilization rate is “mainly caused by the limitation of charge cut-off voltage commonly used in the art,” which is “no more than 4.2 V.” *Id.* at 1:44–47. The '641 asserts that the technical requirement that the charge cut-off voltage not exceed 4.2 V is “well accepted” in the industry and “all lithium ion batteries in the markets around the world are manufactured under this technical requirement.” *Id.* at 1:46–51.

Although it was known in the art that capacity could be improved by increasing the charge cut-off voltage, the '641 patent reports that the “opinions in the prior research results and documents” were that “the positive electrode materials and the negative electrode materials will undergo structure change, the electrolyte may decompose, and the recycle property of the cell will be adversely affected when the charge cut-off voltage is greater than 4.2 V.” *Id.* at 1:56–63.

The '641 patent reports that, after conducting “a large number of experiments and studies,” it was determined that “the efficacy of electrode active materials is greatly increased by increasing the charge cut-off voltage and proper[ly] adjusting the ratio of positive electrode material to negative electrode material of [a] single lithium ion cell.” *Id.* at 3:3–12. The '641 patent further reports that “[w]ithin a certain range of charge cut-off voltage,” it was determined that “the decomposition of little electrolyte solution brings about negligible effect on the recycle property of [the] cell.” *Id.* at 5:19–21

#### *D. Illustrative Claims*

Claims 1 and 5 are the only independent claims of the '641 patent, with challenged claims 2–4 and 15–18 depending from claim 1, and challenged claims 6–14 depending directly or indirectly from independent claim 5. Claim 1 is illustrative of the challenged claims and is reproduced below.

1. A method for improving the capacity, average operating voltage and specific energy of a secondary lithium ion cell or battery, characterized in that the charge cut-off voltage of the secondary lithium ion cell or battery is greater than 4.2 V but less than 5.8 V; and a ratio of positive electrode material to negative electrode material of the secondary lithium ion cell or battery is from 1:1.0 to 1:2.5 as calculated by a specific capacity with a charge voltage limited to 4.2 V.

Ex. 1001, 16:54–61.

*E. Asserted Grounds of Unpatentability*

Petitioner asserts the following grounds of unpatentability (Pet. 7):<sup>1</sup>

| <b>Claim(s)<br/>Challenged</b> | <b>35 U.S.C. §</b> | <b>Reference(s)/Basis</b>     |
|--------------------------------|--------------------|-------------------------------|
| 1–8                            | 102(e)             | Uemura <sup>2</sup>           |
| 1–8, 11–18                     | 103(a)             | Uemura                        |
| 11–18                          | 103                | Uemura, Guyomard <sup>3</sup> |
| 1–8                            | 102(b)             | Abe <sup>4</sup>              |
| 1–8                            | 103(a)             | Abe                           |
| 2–4, 6–8, 11–18                | 103(a)             | Abe, Guyomard                 |
| 9                              | 103                | Uemura, Iwaizono <sup>5</sup> |
| 9–10                           | 103                | Uemura, Iwaizono, Guyomard    |
| 9–10                           | 103                | Abe, Guyomard, Iwaizono       |

III. ANALYSIS

*A. Legal Standard*

A claim may be invalid as anticipated if “each and every limitation is found either expressly or inherently in a single prior art reference.” *Sanofi–Synthelabo v. Apotex, Inc.*, 470 F.3d 1368, 1375 (Fed. Cir. 2006) (internal quotation marks omitted). Anticipation under § 102 may be established by

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<sup>1</sup> The relevant sections of the Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112–29, took effect on March 16, 2013. The ’641 patent issued July 6, 2010. Ex. 1001, code (45). Thus, we apply the pre-AIA versions of §§ 102 and 103.

<sup>2</sup> US 2002/0012830 A1, published January 31, 2002. Ex. 1009 (“Uemura”).

<sup>3</sup> D. Guyomard and J.M. Tarascon, *Li Metal-Free Rechargeable LiMn<sub>2</sub>O<sub>4</sub>?/?Carbon Cells: Their Understanding and Optimization*, J. Electrochem. Soc. 1992, (937–948). Ex. 1015 (“Guyomard”).

<sup>4</sup> JP Patent Application Publication No. H10[1998]-189052, published July 21, 1998. Ex. 1005 (“Abe”).

<sup>5</sup> US 6,577,105 B1, issued June 10, 2003. Ex. 1007 (“Iwaizono”).

showing, as a matter of fact, that all elements arranged as specified in a claim are disclosed within the four corners of a reference, either expressly or inherently, in a manner enabling one skilled in the art to practice an embodiment of the claimed invention without undue experimentation. *See ClearValue, Inc. v. Pearl River Polymers, Inc.*, 668 F.3d 1340, 1344 (Fed. Cir. 2012).

A patent claim is unpatentable under 35 U.S.C. § 103(a) if the differences between the claimed subject matter and “the prior art are such that the subject matter, as a whole, would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) when in evidence, objective evidence of nonobviousness.<sup>6</sup> *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

#### *B. Level of Ordinary Skill in the Art*

In order to determine whether an invention would have been obvious at the time the application was filed, we consider the level of ordinary skill in the pertinent art. *Graham*, 383 U.S. at 17. The resolution of this question is important because it allows us to “maintain[] objectivity in the

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<sup>6</sup> Objective evidence of nonobviousness is not at issue at this time.

obviousness inquiry.” *Ryko Mfg. Co. v. Nu-Star, Inc.*, 950 F.2d 714, 718 (Fed. Cir. 1991).

In assessing the level of ordinary skill in the art, various factors may be considered, including the “type of problems encountered in the art; prior art solutions to those problems; rapidity with which innovations are made; sophistication of the technology; and educational level of active workers in the field.” *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (quotation omitted).

Petitioner contends that a person of ordinary skill in the art “would have had a Master’s degree in material science, chemical engineering, chemistry, or similar field with four years experience designing testing, and building secondary lithium batteries.” Pet. 11 (citing Ex. 1002 ¶ 51).

Petitioner further contends that a person of ordinary skill in the art would have been aware of “(1) positive electrode materials, (2) negative electrode materials, (3) separators, (4) electrolytes, (5) charge-discharge parameters, and (6) protection circuits, as well as ‘battery failure modes’ such as plating and the formation of dendrites.” *Id.* at 11–12 (citing Ex. 1002 ¶¶ 50–51).

Upon review of the prior art of record and the Petitioner’s arguments, we adopt Petitioner’s uncontested definition of the person of ordinary skill in the art for purposes of this Decision as it appears consistent with the ’641 patent and the prior art of record.

### *C. Claim Construction*

In an *inter partes* review proceeding, a patent claim is construed using the same claim construction standard that would be used to construe the claim in a civil action under 35 U.S.C. § 282(b). 37 C.F.R. § 42.100(b) (as amended Oct. 11, 2018). This rule adopts the same claim construction

standard used by Article III federal courts, which follow *Phillips v. AWH Corp.*, 415 F.3d 1303 (Fed. Cir. 2005) (en banc), and its progeny. Under this standard, the words of a claim are generally given their “ordinary and customary meaning,” which is the meaning the term would have to a person of ordinary skill at the time of the invention, in the context of the entire patent including the specification. *See Phillips*, 415 F.3d at 1312–13.

Petitioner provides constructions for the terms “A method for improving . . . characterized in that,” “ratio of positive electrode material to negative electrode material as calculated by a theoretic capacity with a charge cut-off voltage set at 4.2 V” (claim 5), “as calculated by a specific capacity with a charge voltage limited to 4.2 V” (claim 1), and “at least 7500 of capacity” (claim 11). Pet. 8–11.

For purposes of this decision, we determine that no claim terms require express construction. *See Nidec Motor Corp. v. Zhongshan Broad Ocean Motor Co.*, 868 F.3d 1013, 1017 (Fed. Cir. 2017) (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999) (“[O]nly those terms need be construed that are in controversy, and only to the extent necessary to resolve the controversy.”)).

#### D. *Institution of Inter Partes Review*

Petitioner contends that the Petition is substantially the same as the petition on which we instituted review in IPR2023-01183. Mot. for Joinder 4. In particular, Petitioner contends that “the Joinder Petition and the Samsung Petition challenge the same claims based on the same prior art grounds and evidence, including an identical declaration from the same expert.” *Id.*

We instituted review of claims 1–18 of the ’641 patent in IPR2023-01183 after a review of all arguments and evidence presented by the parties, including Patent Owner’s arguments in its preliminary response. For the reasons discussed in the Institution Decision in IPR2023-01183, we determine that Petitioner demonstrates a reasonable likelihood of showing at least one claim of the ’641 patent is unpatentable. Thus, we find that the Petition warrants institution of *inter partes* review on all claims and grounds set forth in the Petition.

#### *E. Motion for Joinder*

Pursuant to 35 U.S.C. § 315(c),

If the Director institutes an *inter partes* review, the Director, in his or her discretion, may join as a party to that *inter partes* review any person who properly files a petition under section 311 that the Director, after receiving a preliminary response under section 313 or the expiration of the time for filing such a response, determines warrants the institution of any *inter partes* review under section 314.

In considering a motion for joinder, and whether such joinder is appropriate, the Board may consider “whether a new ground of unpatentability is raised in the second petition, how the cost and schedule of the first proceeding will be impacted if joinder is granted, and whether granting joinder will add to the complexity of briefing and/or discovery.” Patent Trial and Appeal Board Consolidated Trial Practice Guide November 2019<sup>7</sup> at 76 (citing *Kyocera Corp. v. SoftView LLC*, IPR2013-00004, Paper 15 at 4 (PTAB Apr. 24, 2013)).

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<sup>7</sup> Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>

Petitioner contends that no new grounds of unpatentability are raised in the Petition. Mot. for Joinder 4–5. Petitioner further agrees to an “understudy” role in which it will not seek additional depositions or deposition time, and “will not assume an active role unless the current petitioner ceases to participate in the Samsung Proceeding.” *Id.* at 5. And, “[b]ecause joinder will not add any new substantive issues, delay the schedule, burden deponents, or increase needless filings,” Petitioner contends “any additional cost to Patent Owner would be minimal.” *Id.*

According to Petitioner, although prejudice to Patent Owner would be minimal, Petitioner would be prejudiced if joinder is not granted “if, for instance, the first Apple proceeding is not instituted and/or the current petitioner of the Samsung Proceeding settles with Patent Owner.” *Id.*

As noted above, Patent Owner did not file a preliminary response to the Petition or an opposition to Petitioner’s Motion for Joinder.

Upon consideration of Petitioner’s arguments, we are persuaded that it is appropriate under these circumstances to join Petitioner to the proceeding in IPR2023-01183. Petitioner’s agreement to accept an “understudy” role and to not actively participate in IPR2023-01183 unless the current petitioner ceases to participate will limit any potential impact on the trial schedule and will avoid increasing the costs or complexity of the proceeding. Therefore, joinder of Petitioner to IPR2023-01183 will further the goals of a just, speedy, and inexpensive resolution of Petitioner’s challenge. 37 C.F.R. § 42.1(b).

#### IV. ORDER

For the foregoing reasons, it is:

ORDERED that, pursuant to 35 U.S.C. § 314(a), *inter partes* review of claims 1–18 of the '641 patent is instituted on all grounds of unpatentability set forth in the Petition;

FURTHER ORDERED that, pursuant to 35 U.S.C. § 314(a) and 37 C.F.R. § 42.4, notice is given of institution of trial commencing on the entry date of this Decision;

FURTHER ORDERED that Petitioner's Motion for Joinder with IPR2023-01183 is granted, and Petitioner is joined as a Petitioner in that proceeding;

FURTHER ORDERED that Petitioner's role in IPR2023-01183 is limited as set forth in Petitioner's Motion for Joinder unless and until the petitioner in that proceeding ceases to participate in IPR2023-01183;

FURTHER ORDERED that the Scheduling Order in IPR2023-01183 shall govern the schedule of the joined proceedings;

FURTHER ORDERED that all further filings shall be made in IPR2023-01183;

FURTHER ORDERED that the case caption in IPR2023-01183 shall be changed to reflect joinder of Apple Inc. as a petitioner in accordance with the attached example (see below);

FURTHER ORDERED that a copy of this Decision shall be entered in the record of IPR2023-01183; and

FURTHER ORDERED that the instant proceeding is terminated under 37 C.F.R. § 42.72.

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BEFORE THE PATENT TRIAL AND APPEAL BOARD

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SAMSUNG ELECTRONICS CO., LTD. and  
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<sup>8</sup> Apple Inc. was joined as a petitioner in this proceeding based on a petition and motion for joinder filed in IPR2024-00597, which was granted.