

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

ARKEMA FRANCE,
Petitioner

v.

HONEYWELL INTERNATIONAL INC.
Patent Owner

Case IPR2015-00916
U.S. Patent No. 8,710,282

PATENT OWNER'S PRELIMINARY RESPONSE

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LIST OF EXHIBITS

Exhibit Number	Exhibit Title
2001	Richard J. Lewis, Sr., Hawley's Condensed Chemical Dictionary, (13 th ed. 1997)

I. INTRODUCTION

Petitioner Arkema France (“Arkema” or “Petitioner”) filed this Petition for *Inter Partes* Review of Claims 1-20 of U.S. Patent No. 8,710,282 (“the ’282 Patent”) (Ex. 1001) which was accorded a filing date of April 20, 2015 (the “Petition”). Pursuant to 37 C.F.R. §42.107(a), Patent Owner, Honeywell International, Inc., (“Honeywell” or “Patent Owner”) submits the following Preliminary Response, filed within three months of the notice according a filing date of April 27, 2015, setting forth reasons why an *inter partes* review should not be instituted.

This petition should be denied for at least two reasons.¹ *First*, the current petition should be denied because the cited references, alone and in combination, fail to teach at least one claim element of the challenged claims of the ’282 Patent, and thus, fail to render any of them obvious. In particular, the Petition fails to show that the cited references disclose, teach or suggest “recovering spent dehydrohalogenating agent [hereinafter “DHA” or “dehydrohalogenating agent”]” as properly construed under the broadest reasonable interpretation standard.

¹ No adverse inference should be drawn from Patent Owner’s decision to oppose institution of this IPR on these two grounds. *See* Patent and Trademark Office, Office Patent Trial Practice Guide (published in Fed. Reg. Vol. 77, No. 157, August 14, 2012), Exhibit 2010 at § II-C.

Accordingly, Petitioner has failed to meet its burden under 37 C.F.R. §42.108(c) of establishing a reasonable likelihood of success that any of Claims 1-20 would be unpatentable based on its challenges. Patent Owner therefore requests that the Board not institute *inter partes* review.

Second, and in the event the Board does not deny all of Petitioner's pending Petitions due to the overly broad claim construction proposed by Petitioner, it should use its discretion to pare down the proceedings so as to avoid the waste of valuable Board and party resources. Specifically, the current petition should be denied as redundant of IPR2015-00915 as it challenges the patentability of Claims 1-20 based on "the same, or substantially the same, prior art and arguments" as the '915 petition. *See* 35 U.S.C. § 325(d). Across the two petitions, Petitioner relies on two primary references, Sedat and Smith, as "distinct and separate alternatives." *Liberty Mutual Ins. Co. v. Progressive Casualty Ins. Co.*, CBM2012-00003, Paper No. 7 (P.T.A.B. Oct. 25, 2012). Irrespective of the base reference or combination of references, the arguments that Petitioner makes with respect to the references in this petition are substantially the same as the arguments it makes with respect to the references in IPR2015-00915 petition. Petitioner makes no effort to articulate "a meaningful distinction in terms of relative strengths and weaknesses with respect to application of the prior art reference disclosure to one or more claim limitations" but simply relies on what Patent Owner "may" argue in the future.

LaRose Industries, LLC. v. Capriola Corp., IPR2013-00120, Paper No. 20 (P.T.A.B. Jul. 22, 2013) (denying request for rehearing because petitioner did not explain any strengths and weaknesses of the references and relied solely on the 102(b) versus 102(e) distinction).

II. **BACKGROUND**

A. **The Integrated Processes for the Manufacture of Fluorinated Olefins of the '282 Patent**

The claims of the '282 Patent are generally directed to integrated processes for the manufacture of fluorinated olefins (Ex. 1001). In particular, though not exclusively, the '282 Patent relates to the processes for producing 2,3,3,3-tetrafluoropropene (HFO-1234yf) and/or 1,2,3,3,3-pentafluoropropene (HFO-1225ye). ('282 Patent at 1:23-26). The '282 Patent has four independent claims (Claims 1, 10, 21, and 36) and 42 dependent claims. Independent Claims 1 and 10 and their depending claims are the subject of this *inter partes* review and are discussed in this Preliminary Response.

B. **Person of Ordinary Skill in the Art**

A person of ordinary skill in the art ("POSITA") would have had, as of the date of invention for the '282 Patent, education and/or experience in the fields of chemistry or chemical engineering and would have taken courses in organic chemistry. Such a person would, based on course work, have a general understanding of organofluorine chemistry and expertise in the techniques used for

separating chemicals based on their physical properties. The education and experience levels may vary between POSITAs, with some persons holding a bachelor's degree, but with 5-10 years of relevant work experience, or others holding a more advanced degree, such as a Ph.D. or M.S., but having fewer years of experience.

III. PETITIONER'S CLAIM CONSTRUCTION IS FLAWED

When considering whether to institute an *inter partes* review, the Board has indicated that it will construe claims by applying the broadest reasonable interpretation in light of the specification. 37 C.F.R. §42.100(b); *In re Cuozzo Speed Techs., LLC*, No. 2014-1301, ___ F.3d ___, 2015 WL 2097949, at *5-*8 (Fed. Cir. July 8, 2015); *see also* Office Patent Trial Practice Guide, 77 Fed. Reg. 48756, 48766 (Aug. 14, 2012). There is a “heavy presumption” that a claim term carries its ordinary and customary meaning. *CCS Fitness, Inc. v. Brunswick Corp.*, 288 F.3d 1359, 1366 (Fed. Cir 2002). Under the broadest reasonable interpretation standard, claim terms are given their ordinary and customary meaning, as would be understood by a POSITA in the context of the entire disclosure. *C.R. Bard, Inc. v. Medline Industries, Inc.*, IPR2015-00509, Paper No. 11 at 7 (P.T.A.B. July 15, 2015) *citing In re Translogic Tech., Inc.*, 504 F.3d 1249, 1257 (Fed. Cir. 2007).

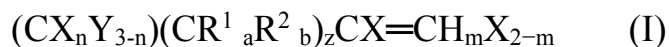
Petitioner's proposed claim construction for the term “recovering spent DHA” fails to account for the intrinsic record of the '282 Patent and is therefore

improper. Indeed, without any basis in the intrinsic record, Petitioner seeks to impose an unreasonably broad construction of this term, given the specification and the claims of the '282 Patent. In contrast to Petitioner's construction, Patent Owner's proposed construction is grounded in the specification, as well as the general principle that claim terms should typically be given their plain and ordinary meaning.

For purposes of this stage of the proceeding, the parties dispute the meaning of at least one term in the challenged claims of the '282 Patent. (Petition at 11-19). As discussed, Petitioner's proposed claim construction ignores the express language of the claims and specification of the '282 Patent. Patent Owner, on the other hand, construes the claim consistent with, and informed by, the claims and the specification of the '282 Patent.

Independent Claims 1 and 10, reproduced below, each contain the disputed claim term, which is bolded:

1. A method for producing at least one fluorinated olefin comprising:
 (a) hydrogenating a starting material stream comprising at least one alkene according to Formula (I):



by contacting said starting material with a reducing agent to produce an intermediate product stream comprising at least one alkane according to Formula (II):



where:

each X is independently Cl, F, I or Br, provided that at least two Xs are F;

each Y is independently H, Cl, F, I or Br;

each R^1 is independently H, Cl, F, I, Br or unsubstituted or halogen substituted methyl or ethyl radical;

each R^2 is independently H, Cl, F, I, Br or unsubstituted or halogen substituted methyl or ethyl radical;

n is 1, 2 or 3;

a and b are each 0, 1 or 2, provided that $a+b=2$;

m is 0, 1 or 2; and

z is 0, 1, 2 or 3;

(b) optionally, separating said intermediate product stream into a plurality of intermediate product streams, said plurality of intermediate product streams comprising two or more streams selected from the group consisting of a first stream rich in at least a first alkane according to Formula II, a second stream rich in at least a second alkane according to Formula II, and an alkane recycle stream;

(c) dehydrofluorinating, in the presence of a dehydrohalogenating agent, at least a portion of said intermediate process stream from step (a) or said plurality of intermediate process streams of step (b) to produce an alkene product stream comprising 1,1,1,2,3-pentafluoropropene and at least one additional alkene having a lower degree of fluorine substitution compared to the degree of fluorination of the compound of formula (I); and

(d) withdrawing from a dehydrofluorinated product stream a product

reaction stream comprising spent dehydrohalogenating agent; and

(e) **recovering spent dehydrohalogenating agent.**

10. A method for producing 2,3,3,3-tetrafluoropropene comprising:

(a) hydrogenating a starting material stream comprising hexafluoropropylene by contacting said starting material stream with a reducing agent in a hydrogenation reactor to produce an intermediate stream comprising 1,1,1,2,3-pentafluoropropane or 1,1,1,2,3,3-hexafluoropropane;

(b) dehydrofluorinating, in the presence of a dehydrohalogenating agent, said 1,1,1,2,3-pentafluoropropane or said 1,1,1,2,3,3-hexafluoropropane in a dehydrofluorination reactor to produce a product stream comprising 2,3,3,3-tetrafluoropropene or 1,2,3,3,3-pentafluoropropene;

(c) withdrawing from the product stream a second product stream comprising spent dehydrohalogenating agent; and

(d) **recovering spent dehydrohalogenating agent.**

Although the Patent Owner reserves the right to disagree with the Petitioner's remaining proposed constructions, for present purposes, the Patent Owner construes only the "recovering spent DHA" term as the Board's construction of this term will be dispositive of whether or not to institute this *inter partes* review.

A. "Recovering Spent DHA"

Claim term	Petitioner's Proposed	Patent Owner's Proposed
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	Construction	Construction
“recovering spent DHA”	“collecting spent DHA for further use (may include separating, purifying, concentrating, and/or regenerating)”	“separating organics dissolved in the [product reaction stream (Claim 1)/second product stream (Claim 10)] from spent DHA”

The specification of the '282 Patent also supports Patent Owner's construction. The term “recovering spent DHA” appears in Claims 1 and 10 of the '282 Patent. When discussing the concept of “recovering spent DHA,” the '282 Patent does so in the context of separating organics dissolved in the aqueous reaction mixture from the previously withdrawn spent DHA² (*see e.g.*, '282 Patent at 2:61-63 (“removal of spent dehydrohalogenating agent from the reactor allows for facile separation of the organic and the dehydrohalogenating agent”; 13:29-45; 15:44-49; 16:14-23). A POSITA would have understood that the recovering step removes dissolved organics from the aqueous reaction mixture so as to result in substantially organic free DHA isolate (*see e.g.*, '282 Patent at 16:22-23 (“GC analysis revealed that the amount of organic was negligible.”) Thus, using the broadest reasonable interpretation standard and as supported by the intrinsic

² Petitioner construes spent DHA as “unreacted DHA remaining after the dehydrohalogenation reaction.” (Petition at 12-14).

record, a POSITA would have understood the claim term “recovering spent DHA” to mean “separating organics dissolved in the [product reaction stream (Claim 1)/second product stream (Claim 10)] from spent DHA,” as proposed by Patent Owner.

Petitioner cannot and does not cite to any portion of the specification that supports the broader reading it espouses. Indeed, when Petitioner does cite the record, the context is more narrow and directed solely to a “separation” step. For example, by way of its expert, Dr. Manzer, Petitioner relies on the following portions of the specification of the '282 Patent, which explicitly supports Patent Owner’s proposed construction:

The product stream containing spent dehydrohalogenating agent typically carries with it some dissolved organic (e.g. HFC-236ea and/or HFC-245eb). By stopping the stirrer and then removing [i.e., “withdrawing”] spent dehydrohalogenating agent [from the dehydrohalogenation reactor]..., **separation of dehydrohalogenating agent and such organic can be facilitated. Spent dehydrohalogenating agent and dissolved organic would be taken into a container where additional separation of dehydrohalogenating agent and organic can be accomplished using one or more of the foregoing separating techniques [i.e., “recovering”]. ... The organic free KOH isolate can be immediately recycled to the reactor or can be concentrated and the concentrated solution can be returned to the reactor.**

(Petition at 16, citing the '282 Patent at 13:29-45 (parentheticals added by Petitioner, bold text added by Patent Owner); Ex. 1002 at ¶ 50). That is, spent DHA and organics dissolved in the aqueous reaction mixture are separated from each other by the use of one or more separating techniques in order to recover spent DHA.

In addition to identifying an explicit disclosure in the specification connoting “recovering” as separation, Petitioner cites two additional sections of the '282 Patent to purportedly support its overly broad definition. Both citations, however, reinforce that “recovering” refers to the process of chemical separation. (Petition at 16). *First*, Petitioner identifies the section describing the Scrubber Product Collection Cylinder (SPCC), where the SPCC is configured to trap the dissolved organics so as to separate the dissolved organics from the spent DHA. ('282 Patent, 15:43-47) (“Scrubber Product Collection Cylinder (SPCC) was used to collect spent KOH and *the portion of organic* that was carried out with spent KOH. *Organic was trapped* in methylene chloride which was previously added to SPCC” (emphasis added)). *Second*, the Petitioner identifies the term “recovered” being used in connection with recovery of HFO-1234yf. (Petition at 16). Consistently again, the specification recites “[t]his HFO-1234yf is then *separated* from the final product stream and recovered as a purified product.” (('282 Patent, 15:43-47) (emphasis added)). The Petitioner does not cite any other usage of the

term “recovery” in support of its broader interpretation and none is contemplated in the specification.

When construed according to Petitioner’s proposed construction, the terms “withdrawing” and “recovering spent DHA” become conflated, which has the effect of rendering the term “recovering spent DHA” meaningless, which is improper even under the broadest reasonable interpretation standard. *See Nest Labs, Inc. v. Allure Energy, Inc.*, IPR2014-01424, Paper No. 6 at 6 (P.T.A.B. March 9, 2015) *citing Digital-Vending Servs. Intern., LLC v. Univ. of Phoenix, Inc.*, 672 F.3d 1270, 1275 (Fed. Cir. 2012) (rejecting a construction that did not give effect to all terms in the claim). According to Petitioner, the term “withdrawing” should be construed as “taking out or removing” and the term “recovering spent DHA” should be construed as “collecting spent DHA for further use (may include separating, purifying, concentrating and/or regenerating.” (Petition at 14-15). There is no meaningful distinction between taking out, removing or collecting effectively eliminating step (e) of Claim 1 and step (d) of Claim 10. *See Apple Inc. et al. v. Memory Integrity, LLC*, IPR2015-00159, Paper No. 12 at 12 (P.T.A.B. May 11, 2015) *citing Cat Tech LLC v. TubeMaster, Inc.*, 528 F.3d 871, 885 (Fed. Cir. 2008) (refusing to adopt a claim construction which would render a claim limitation meaningless). The intrinsic record, as discussed above, however, clearly shows that “recovering spent DHA” requires something

more than merely “collecting spent DHA for further use” (*see e.g.*, ’282 Patent at 2:61-63; 13:29-45; 15:44-49; 16:14-23). In contrast, Patent Owner’s construction provides meaning to the term “recovering spent DHA.”

Other claims also undercut Petitioner’s construction. *See Rexnord Corp. v. Laitram Corp.*, 274 F.3d 1336, 1342 (Fed. Cir. 2001) (looking to the same term in other claims); *see also Laitram Corp. v. Rexnord, Inc.*, 939 F.2d 1533, 1538 (Fed. Cir. 1991) (differences among claims can also be a useful guide in understanding the meaning of particular claim terms). In the claims of the ’282 Patent, it is only after dissolved organics have been removed that the spent DHA is optionally further concentrated, converted, and/or recycled. For example, Claim 15 is directed to the process of Claim 10 “further comprising, optionally, concentrating the purified dehydrohalogenating agent and recycling it back to the dehydrohalogenation reaction.” (’282 Patent at 17:53-55). Claims 17 and 19 ultimately depend from Claim 10 and further comprise “optionally, converting the by-product salts to the dehydrohalogenating agent” (’282 Patent at 17:59-60) and “optionally, concentrating the converted KOH and recycling it back to the dehydrohalogenation reaction.” (’282 Patent at 17:63-65). These additional positively recited steps of converting, concentrating, and recycling found in the dependent claims demonstrate that such steps are distinct from the step of recovering spent DHA. Indeed, it is precisely these terms that are being

improperly read into the term “recovering spent DHA” by Petitioner.

While dependent Claims 15, 17, and 19 underscore the flaws in Petitioner’s construction, Claim 11 may be interpreted, albeit not by Petitioner, in a manner that suggests “dissolved organics” are excluded from the second product stream in Claim 10. Such a reading is not only nonsensical given the chemistry involved³, but any presumption created by the doctrine of claim differentiation “will be overcome by a contrary construction dictated by the written description or prosecution history,” *Microsoft Corp. v. Proxyconn, Inc.*, IPR2012-00026, Paper No. 28 at 6 (P.T.A.B. February 25, 2013), *citing Retractable Techs., Inc. v. Becton, Dickinson & Co.*, 653 F.3d 1296, 1305 (Fed. Cir. 2011).

Unlike the distinctions identified in at least Claims 15, 17, and 19 that are consistent with the ’282 Patent specification and highlight an unreasonably broad construction proposed by Petitioner, a reading of Claim 10 where the second product stream excludes dissolved organics is not. Accordingly, as claim differentiation is only a guide, and reading claims “in light of the specification” is a strict rule, the specification of the ’282 Patent trumps any reading of Claim 10 that excludes “dissolved organics” from the second product stream. *TRW Automotive US LLC v. Magna Electronics Inc.*, IPR2014-00265, Paper No. 17 at 7 (P.T.A.B.

³ Masayuki confirms the presence of dissolved organics in a second product stream. (Ex. 1005 at 4:35-38 and 9:15-27).

August 13, 2014) *citing Retractable Techs.*, 653 F.3d at 1305 (“Claim language must always be read in view of the written description, and any presumption created by the doctrine of claim differentiation ‘will be overcome by a contrary construction dictated by the written description or prosecution history.’”).

For at least the foregoing reasons, the Board should construe “recovering spent DHA” in accordance with Patent Owner’s proposed constructions, which is consistent with the claim language and the intrinsic evidence.

IV. THE BOARD SHOULD NOT INSTITUTE *INTER PARTES* REVIEW AS PETITIONER HAS FAILED TO CARRY ITS BURDEN OF PROVING THAT THERE IS A LIKELIHOOD THAT ANY CHALLENGED CLAIM IS UNPATENTABLE.

Petitioner has failed to meet its obligations with respect to the claims challenged in the Petition. Pursuant to 37 C.F.R. §42.108(c), Petitioner must demonstrate that there is a reasonable likelihood that each claim is unpatentable to warrant institution of an *inter partes* review for that claim. Petitioner has not done so.

A. The combination of Smith, Masayuki and Harrison Does Not Render Obvious Claims 1-20

Petitioner has not shown that it has a reasonable likelihood of prevailing on its ground for challenge because Petitioner’s analysis of the cited references is premised on a fundamental misunderstanding of the claims of the ’282 Patent. When the claims are properly construed, Smith, Masayuki and Harrison, alone and

in combination, fail to render obvious Claims 1 or 10 (and the claims that depend therefrom), as they fail to disclose at least one claim limitation.

The Petition maps each of Smith, Masayuki, and Harrison to certain recitations of Claims 1 and 10. That said, for the “recovering spent DHA” step, Petitioner relies solely on the disclosures of Masayuki and Harrison. However, in the sections that follow, Patent Owner identifies that neither, Masayuki, Harrison, nor Smith disclose, teach or suggest “recovering spent DHA.”

1. Masayuki Does Not Disclose Recovering Spent DHA.

Masayuki sought to produce chloroprene in a long term continuous process which, among other things, did not readily result in clogging of the apparatus due to the chloroprene polymer (Ex. 1005 at 6:5-13). Masayuki recognized that the “salt water” produced in such a process “contains primarily unreacted alkali metal hydroxide and produced alkali metal chloride *as well as a small amount of organic components.*” (Ex. 1005 at 4:35-38) (Emphasis added). These organic components, which are dissolved in the salt water/aqueous phase, are what Masayuki realized caused clogging problems in the process:

[C]onventionally precipitation of dissolved alkali metal chloride accompanying the evaporation of this water as well as precipitation of polymer due to small amounts of 3,4-dichloro-butene-1, chloroprene and polymer contained in the aqueous phase are problematic. Though it is possible to dissolve precipitants using water, as is typically done to avoid trouble arising from the precipitation of alkali metal chloride,

trouble caused by polymer requires that the apparatus used be dismantled. As a result, concentration of alkali metal hydroxide aqueous solution *containing polymerizable organics*, as is performed in the present invention, has not been previously carried out.

(Ex. 1005 at 9:15-27) (Emphasis added).

Rather than separating the small amounts of 3,4-dichloro-butene-1 and chloroprene⁴ dissolved in the aqueous phase from the alkali metal hydroxide, Masayuki's proposed solution to the clogging problem is to perform the concentration step at a high temperature (i.e., 95-150°C) in order to prevent polymerization:

As a result of intensive investigations, it was discovered that when the operation is performed at a temperature of 95°C or greater, it is possible to avoid trouble caused by polymer, even when a standard apparatus is used. If concentration is performed at a temperature lower than 95°C, within a short period of time, disassembly of the apparatus is required due to deposition of polymer onto the apparatus. Additionally, operation at a temperature of 150°C or greater is not energy efficient and requires that expensive materials be used for the apparatus, which is not desirable. Therefore, concentration performed within a range of 95 – 150°C is suitable.

⁴ Given Petitioner's construction of the term "dissolved organics," the POSITA would understand that 3,4-dichloro-butene-1 and chloroprene were dissolved organics.

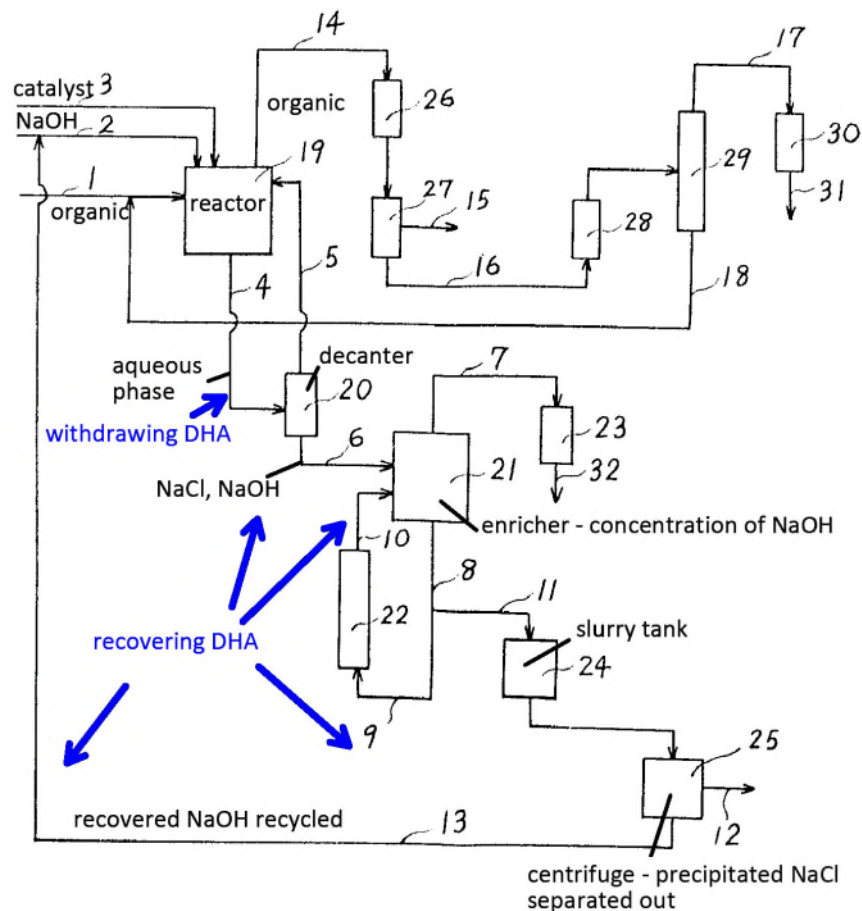
(Ex. 1005 at 9:27-10:2).

Thus, although Masayuki recognizes the presence and problems associated with organic components dissolved in the aqueous phase, Masayuki does not solve this problem by separating the dissolved organics. Rather, Masayuki teaches that if the temperature is kept high during the concentration of the alkali metal hydroxide solution, the dissolved organics will not polymerize. This difference is stark; the invention of Claims 1 and 10 removes the organics from the mixture, whereas Masayuki retains the organics and uses temperature to mitigate the effect the dissolved organics have on further processing. As such, Masayuki allegedly solved the problem in a completely different manner; rather than remove the dissolved organics, Masayuki accommodates their existence. As such, Masayuki does not disclose at least the “recovering spent DHA” limitation required by Claims 1 and 10, and all claims depending therefrom.

Petitioner ignores the express language of the claims in view of the specification and instead relies on Masayuki’s disclosure of decanting, concentrating, and precipitating, and separating of alkali metal chloride precipitate⁵ as teaching “recovering spent DHA.” (Petition at 30-31, 37, & 43-46). Indeed,

⁵ The POSITA would understand that an alkali metal halide is not an organic compound. (Ex. 2001 at 610 (“inorganic chemistry”) and 823-24 (“organic chemistry”).

Petitioner's annotated version of the Figure from Masayuki (reproduced below) reflects Petitioner's flawed reliance on these steps as "recovering spent DHA":



(Petition at 23 (annotations by Petitioner)).

Each of these steps, however, fails to separate the dissolved organic components from the aqueous phase in order to recover spent DHA. Specifically, with respect to the decanting step, Petitioner relies on the following passage in Masayuki:

The aqueous phase was extracted via Conduit 4 such that the level of Reactor 19 remained constant and the lightly mixed lipid and aqueous

phases (including precipitated sodium chloride) were separated using Decanter 20, after which the lipid phase was returned to the reactor via Conduit 5.

(Ex. 1005 at 10:33-11:1).

As recognized by Petitioner, by way of its expert, Dr. Manzer, the decanting step in Masayuki is utilized to separate the organic catalyst contained in the lipid phase from the aqueous phase (Ex. 1002 at ¶¶ 91, 121). Once removed, the organic catalyst (e.g., a quaternary ammonium compound, quaternary phosphonium compound, quaternary sulfonium compound or mixture thereof) is returned back to the Reactor 19 (Ex. 1005 at 7:21-30 and 10:33-11:1). This decanting step, however, does not remove the organic components—small amounts of 3,4-dichloro-butene-1, chloroprene and polymer—which are dissolved in the aqueous phase as these organic components remain dissolved in the aqueous phase as it progresses to the concentration loop consisting of the enricher and heat exchanger (Ex. 1005 at 9:24-27 and 11:1-9). In other words, the decanting step in Masayuki simply removes the lipid phase, which by definition is insoluble in water,⁶ not the dissolved organics, from the aqueous reaction mixture.

With respect to the concentrating step, Petitioner relies on the following passage in Masayuki:

⁶ Ex. 2001 at 674 (a lipid “includes all substances that are (1) relatively insoluble in water but soluble in organic solvents (benzene, chloroform, acetone, ether, etc.)”).

The aqueous phase...was fed into a forced circulation-type Enricher 21 via Conduit 6 and concentration was carried out ... After passing through Conduit 9 from Conduit 8, the aqueous phase was heated in Heat Exchanger 22 after which it was circulating in Enricher 21 via Conduit 10.

(Ex. 1005 at 11:1-9).

As previously explained, in order to avoid clogging and the resulting dismantling of the apparatus due to polymerization of the dissolved organic components in the aqueous phase, rather than separating such dissolved organic components, Masayuki teaches performing the concentration step at 95-150°C (Ex. 1005 at 9:15-10:2). Thus, it is clear that Masayuki intends there to be dissolved organics during concentration, confirming that said organics were not decanted off by Decanter 20.

Petitioner further relies on Masayuki's disclosure of precipitating and separating the precipitated sodium chloride from the aqueous phase as "recovering spent DHA." (Petition at 37 and 45-46). After concentration and upon entry into the slurry tank and centrifuge, however, Masayuki is again silent as to the removal of any of the dissolved organics during precipitation and separation of the solid alkali metal chloride indicating that the dissolved organics are still in solution (Ex. 1005 at 11:9-16).⁷ Thus, Masayuki fails to teach the separation of the dissolved

⁷ Given that Masayuki confirms the presence of dissolved organics during

organics from the aqueous phase from any step in its process. It is clear that Petitioner advances its unreasonably broad construction of “recovering spent DHA” in an attempt to fit Masayuki, which fails to teach the separation of dissolved organics, into the claim.

Therefore, although Masayuki recognizes the presence of and the problems associated with the organic components dissolved in the aqueous phase, Masayuki does not teach a POSITA to separate such dissolved organics. Rather, Masayuki directs a POSITA to carry out the concentration of the alkali metal hydroxide solution in the presence of the polymerizable organics dissolved in the solution. As such, Masayuki fails to disclose at least the “recovering spent DHA” limitation

concentration, the POSITA would understand that the dissolved organics are still present during precipitation and separation of the solid alkali metal chloride and they remain in solution as the sodium hydroxide is recycled into the reactor. (Ex. 1005 at 9:27-10:2). In contrast, the ’282 Patent recites: “Spent dehydrohalogenating agent and dissolved organic would be taken into a container where additional separation of dehydrohalogenating agent and organic can be accomplished using one or more of the foregoing separating techniques [i.e., “recovering”]. ... The organic free KOH isolate can be immediately recycled to the reactor or can be concentrated and the concentrated solution can be returned to the reactor. (’282 Patent at 13:34-45).

required by Claims 1 and 10, and all claims depending therefrom.

2. Harrison Does Not Disclose Recovering Spent DHA.

Harrison is directed to a process for the preparation of calcium fluoride from industrial waste waters which comprises, among other steps, treatment of the waste waters with potassium hydroxide followed by lime precipitation (Ex. 1006 at Abstract). As with Masayuki, it is clear that Petitioner advances its unreasonably broad construction of the “recovering spent DHA” in an attempt to fit Harrison, which is silent on separation of dissolved organics, into the claim. Petitioner cites to the following portions of Harrison in support of “recovering spent DHA”:

... (b) contacting [an aqueous solution of potassium fluoride and potassium hydroxide] with finely divided high purity lime to thereby obtain calcium fluoride precipitate in aqueous potassium hydroxide; (c) settling the reaction product of step (b) into two phases comprising an aqueous potassium hydroxide supernatant and an aqueous slurry of calcium fluoride; (d) recovering the aqueous potassium hydroxide supernatant...

The basic potassium fluoride solution is then mixed with solid hydrated (slaked) lime in a stirred vessel where this calcium hydroxide $[\text{Ca}(\text{OH})_2]$ reacts to form the calcium fluoride precipitate and regenerate the potassium hydroxide.

(Petition at 37 and 45-46, citing Ex. 1006 at 2:14-21 and 3:6-10 (parentheticals added by Petitioner)).

A review of Harrison reveals that it is completely silent as to organics dissolved in the aqueous reaction mixture and the separation of such dissolved organics. The Petition likewise fails to identify organics dissolved in the aqueous reaction mixture and the separation of such dissolved organics.⁸ As such, Harrison fails to disclose “recovering spent DHA.”

3. Smith Does Not Disclose Recovering Spent DHA.

Finally, Smith is generally directed to the process for the preparation of 1234yf via hydrogenation and dehydrogenation steps. (Ex. 1003 at Abstract). Smith is completely silent as to the separation of dissolved organics from the spent DHA in order to recover spent DHA. As such, Smith fails to disclose “recovering spent DHA.” Indeed, Petitioner does not cite to or rely on Smith in support of this limitation.

Given that none of the cited references disclose “recovering spent DHA,” it logically follows that the combination of references cannot disclose, teach or suggest “recovering spent DHA.” As such, when the claims are properly construed, Smith, Masayuki and Harrison fail to render obvious Claims 1 or 10, and all claims depending therefrom, as they fail to disclose at least the step of “recovering spent DHA.”

⁸ Petitioner does not identify the presence of dissolved organics in either Masayuki or Harrison (Petition at 38-39).

V. THE BOARD SHOULD NOT INSTITUTE THIS *INTER PARTES* REVIEW AS THE PETITIONER RELIES ON MULTIPLE GROUNDS OF CHALLENGE ACROSS MULTIPLE PETITIONS, WITH NO ATTEMPT TO DISTINGUISH BETWEEN THEM.

The Board should exercise its discretion and decline to institute an *inter partes* review of Petitioner's challenges based on Smith in view of Masayuki and Harrison because Petitioner's arguments in this Petition are the same or substantially the same as advanced by Petitioner in IPR2015-00915. *See* 35 U.S.C. § 314(a) (institution is discretionary, not mandatory); 35 U.S.C. § 325 (d) ("In determining whether to institute or order a proceeding under . . . chapter 31, the Director may take into account whether, and reject the petition or request because, the same or substantially the same prior art or arguments previously were presented to the Office."). Creatively, Petitioner advanced its redundant challenges in separate petitions, however the mere payment of an additional filing fee does not excuse the rigorous rules for redundancy. *See Unilever, Inc. d/b/a Unilever v. Proctor & Gamble Co.*, IPR2014-00506, Paper No. 17 at 6 (P.T.A.B. July 7, 2014) (denying a second IPR petition when the petitioner did not justify how it differed from a first IPR petition on the same patent); *Medtronic, Inc. v. Robert Bosch Healthcare Sys., Inc.*, IPR2014-00436, Paper No. 17 at 12 (P.T.A.B. June 19, 2014); *LG Electronics, Inc. v. ATI Technologies ULC*, IPR2015-00327, Paper No. 13 at 11-12 (P.T.A.B. July 10, 2015). As a result, the Board should exercise its discretion and deny the current petition in its entirety.

The Board has identified two types of redundancy: horizontal and vertical.

[Horizontal redundancy] involves a plurality of prior art references applied not in combination to complement each other but as distinct and separate alternatives. All of the myriad references relied on provide essentially the same teaching to meet the same claim limitation, and the associated arguments do not explain why one reference more closely satisfies the claim limitation at issue in some respects than another reference, and vice versa. Because the references are not identical, each reference has to be better in some respect or else the references are collectively horizontally redundant.

Liberty Mutual, CBM2012-00003, Paper No. 7 at 3. Vertical redundancy, on the other hand, exists when additional references are added to a base reference or combination of references without any apparent or explained need for the addition (*i.e.*, the base reference or combination of references is already alleged to disclose all elements of the claim, and no weaknesses are identified for the base reference or combination of references). *See, e.g., id.* at 12. Both horizontal and vertical redundancy are fatal to a ground for challenge.

On April 20, 2015, Petitioner filed three petitions for *inter partes* review that were assigned *inter partes* review numbers IPR2015-00915, IPR2015-00916, and IPR2015-00917 relying on the following grounds of challenge as distinct alternatives to each other:

Petition	Grounds of Challenge Based On	Claims
IPR2015-00915	Sedat (Ground 1)	21-27, 30-38, and 41-46
	Smith and Sedat (Ground 2)	1-20, 21, 28, 29, 36, 39, and 40
IPR2015-00916	Smith, Masayuki, and Harrison (Ground 1)	1-20
IPR2015-00917	Smith, Masayuki, and Harrison (Ground 1)	21-46

This petition, however, is a classic example of improper horizontal redundancy wherein Petitioner relies on Smith, Masayuki and Harrison for essentially the same teachings as Sedat to purportedly meet the same claim elements. Simply put, the Petitioner does not explain why Sedat alone, or any of the other proffered combinations of Smith, Sedat, Masayuki or Harrison, more closely satisfy the claim elements in some respects than Sedat alone.

Futilely, Petitioner states “the filing of multiple petitions is justified in this instance because of uncertainty as to whether the Patent Owner will attempt to antedate one of the prior art references relied upon in IPR2015-00915” (Petition at 1). In instances in which Petitioner relies solely on the dates of two references, the

Board has determined that the Petitioner has not explained the required “strengths and weaknesses.” *LaRose Industries, LLC*, IPR2013-00120, Paper No. 20 at 4. As such, the fact that Patent Owner may attempt to antedate a reference if trial is instituted is irrelevant to the redundancy inquiry. *Id.*; *Carl Zeiss SMT GmbH v. Nikon Corp.*, IPR2013- 00363, Paper No. 17, at 3-5 (P.T.A.B. Jan. 30, 2014).

Like here, where the Petitioner fails to meet the requirement of explaining the required “strengths and weaknesses” and points only to a “date,” the Board has declined to institute *inter partes* review on any of the redundant grounds or references. *LaRose Industries, LLC*, IPR2013-00120, Paper No. 20 at 4; *see also Liberty Mutual*, CBM2012-00003, Paper No. 7 at 8-9; *Berk-Tek LLC v. Belden Techs. Inc.*, IPR2013-00057, Paper No. 21 at 4-5 (P.T.A.B. May 14, 2013) (“If the petitioner makes no meaningful distinction between certain grounds, the Board may exercise discretion by acting on one or more grounds and regard the others as redundant”).

Petitioner’s assertion of redundant grounds without articulating why one set of grounds has any particular strength or weakness relative to the other set of grounds is little more than an attempt to advance the same argument multiple times based on different, but undistinguished art. Multiple distinct trials considering both the Sedat reference alone and the various combinations of Smith, Sedat, Masayuki or Harrison would run contrary to the legislative intent of the America

Invents Act and would compel the Board to expend time and effort unnecessarily to consider multiple sets of grounds, when the same result, whatever that result may be, could apparently be reached through trial instituted on only a single set of grounds.

Should the Board decide to institute trial, Patent Owner is prepared to defend itself against each of the Petitions equally as has been demonstrated in part throughout each of the preliminary responses. That said, Petitioner was ultimately in control of its own filings and submitted a Petition that was susceptible to a swear-behind. This tactical decision leaves the Board to determine the most efficient manner in which trial should proceed. As IPR2015-00915 addresses all of the grounds in a single petition, IPR2015-00915 appears to be the clear choice.⁹ Accordingly, Patent Owner requests the Board to use its discretion should it determine not to deny all three petitions, and deny institution in this case.

VI. CONCLUSION

Petitioner's redundant challenges to the claims of the '282 Patent rely on an

⁹ Petitioner itself identifies the relative strength of Sedat alone as Petitioner has copied certain claims of the '282 Patent and filed them in a continuation of Sedat in hopes of provoking an interference. IPR2015-00916, Paper No. 6. Such a threat of another proceeding further highlights the inefficiency in proceeding on all three Petitions.

overly broad and unreasonable construction of the claims that appears to have been constructed with eye toward the teachings of the cited references. Once properly construed, it is apparent that the cited art does not disclose, teach or suggest “recovering spent DHA.”

For at least the foregoing reasons, Petitioner has failed to meet the burden under 37 C.F.R. §42.108(c) of showing a reasonable likelihood of success that any of Claims 1-20 would be unpatentable based on its challenges. As such, Patent Owner respectfully requests that the Board deny institution of an *inter partes* review.

Dated: July 27, 2015

Respectfully submitted,

/Bruce J. Rose/

Bruce J. Rose (Reg. No. 37,431)

Miranda M. Sooter (Reg. No. 57,126)

Christopher TL Douglas (Reg. No. 56,950)

Attorneys for

Patent Owner Honeywell International Inc.

CERTIFICATE OF SERVICE

Pursuant to 37 C.F.R. § 42.6(e), the undersigned hereby certifies that, on July 27, 2015, a true copy of the foregoing Preliminary Response and its respective exhibits was served upon the following via electronic delivery:

Jon Beaupré
Allen R. Baum
Allyn B. Elliott
Joshua E. Ney
Nicholas A. Restauri

Brinks, Gilson & Lione
524 South Main St., Suite 200
Ann Arbor, MI 48104

Email: jbeaupre@brinksgilson.com
Email: Arkema_HoneywellIPRs@brinksgilson.com

/Bruce J. Rose/
Bruce J. Rose (Reg. No. 37,431)