UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
95/001,745	09/07/2011	7229597	B248 7003US (88418.0023.1	4882

109171 7590 03/01/2018

WOMBLE BOND DICKINSON (US) LLP
Attn: IP Docketing
P.O. Box 7037
Atlanta, GA 30357-7037

EXAMINER	
LOPEZ, CARLOS N	

ART UNIT	PAPER NUMBER
3991	

MAIL DATE	DELIVERY MODE
03/01/2018	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Johnson Matthey, Inc.
Requester

v.

Patent of BASF Corporation,
Patent Owner and Appellant

Appeal 2017-009233
Reexamination Control 95/001,745
Patent 7,229,597 B2
Technology Center 3900

Before RICHARD M. LEBOVITZ, JEFFREY B. ROBERTSON, and JEFFREY W. ABRAHAM, *Administrative Patent Judges*.

ROBERTSON, *Administrative Patent Judge*.

DECISION ON APPEAL

Patent Owner BASF Corporation (hereinafter "Patent Owner") appeals under 35 U.S.C. §§ 134(b) and 315(a) from the Examiner's rejection of claims 1–15 as unpatentable under 35 U.S.C. § 103(a).[1] Third-Party

[1] *See* Patent Owner's Appeal Brief filed November 27, 2013, hereinafter "PO Appeal Br."; Patent Owner's Rebuttal Brief filed March 11, 2014, hereinafter "PO Reb. Br.;" Examiner's Answer mailed August 18, 2015,

Requester Johnson Matthey, Inc. (hereinafter "JMI") urges that the Examiner's decision must be affirmed.[2] JMI also appeals under 35 U.S.C. §§ 134(c) and 315(b) from the Examiner's failure to reject claims 1–15 also under 35 U.S.C. § 103(a).[3] Patent Owner urges that the Examiner's decision must be affirmed.[4] We have jurisdiction under 35 U.S.C. § 6.

We AFFIRM the Examiner's decision to reject claims 1–15. We REVERSE the Examiner's decision not to adopt a proposed rejection of claim 11. By operation of rule, our reversal constitutes a new ground of rejection of claim 11 under 37 C.F.R. § 41.77(b).

STATEMENT OF THE CASE

JMI requested *inter partes* reexamination of United States Patent 7,229,597 (hereinafter "the '597 Patent.") on September 7, 2011, which was assigned Reexamination Control No. 95/001,745 (hereinafter "the '745 Reexamination").

The '597 Patent issued to Joseph A. Patchett et al. on June 12, 2007, based on Application No. 10/634,659, filed on August 5, 2003. United States Patent 7,902,107 B2 (hereinafter the "'107 Patent") is a continuation

---

hereinafter "Ans.," Right of Appeal Notice mailed August 13, 2013, hereinafter "RAN."

[2] *See* JMI's Respondent Brief to Patent Owner's Appeal Brief filed March 11, 2014, hereinafter "JMI Resp't Br."

[3] *See* JMI's Appeal Brief filed November 27, 2013, hereinafter "JMI Appeal Br."; JMI's Rebuttal Brief filed September 17, 2015, hereinafter "JMI Reb. Br."

[4] *See* Patent Owner's Respondent Brief to JMI's Appeal Brief filed December 23, 2013, hereinafter "PO Resp't Br."

of the ’597 Patent and the subject of merged Reexamination Control Nos. 95/001,744 and 95/001,894 (“merged reexaminations”) in which a Decision on Appeal to the Board issued on August 29, 2017, reversing the Examiner’s decision not to reject the claims. (Decision in Appeal No. 2017-006009, 2, 27.) A request for rehearing was filed on September 29, 2017, in response to which, Requester JMI filed comments on October 27, 2017. A decision on Patent Owner’s request for rehearing is being issued concurrently herewith.

In addition, several other patents claiming the benefit of the ’597 Patent were subjected to *Inter Partes* Review, namely U.S. Patent 8,899,023 (IPR 2015-01265); U.S. Patent 9,039,982 (IPR 2015-01266); and U.S. Patent 9,032,709 (IPR 2015-01267). Final Written Decisions were entered in all three *Inter Partes* Review proceedings determining that the Petitioner had failed to show by a preponderance of the evidence that the claims were unpatentable. (IPR 2015-01265, Paper No. 35 entered November 30, 2016; IPR 2015-01266, Paper No. 35 entered November 30, 2016; IPR 2015-01267, Paper No. 35 entered November 30, 2016.)

The ’597 Patent states that the invention relates to an emission treatment system including a material effective in the Selective Catalytic Reduction (SCR) of nitrogen oxides (NOx) by a reductant, such as ammonia, and an oxidation catalyst, an injector that periodically meters the reductant into an exhaust stream, and a wall-flow monolith containing an SCR catalyst composition including a zeolite and base metal component selected from copper or iron. (Col. 1, ll. 4–11; col. 4, ll. 23–30, 45–52.)

Claim 1, which is illustrative of the appealed subject matter, reads as follows (with underlining indicating additions relative to the claim as issued):

> 1. An emission treatment system for treatment of an exhaust stream comprising NOx and particulate matter, the emission treatment system comprising:
>
> a) an oxidation catalyst;
>
> b) an injector in fluid communication with and downstream of the oxidation catalyst, wherein the injector periodically meters ammonia or an ammonia precursor into the exhaust stream; and
>
> c) a wall flow monolith in fluid communication with and downstream of the injector, wherein the wall flow monolith has a plurality of longitudinally extending passages formed by longitudinally extending walls bounding and defining said passages, wherein the passages comprise inlet passages having an open inlet end and a closed outlet end, and outlet passages having a closed inlet end and an open outlet end,
>
> wherein the wall flow monolith comprises <u>a washcoat</u> of an SCR catalyst composition that permeates the walls at a concentration of at least 1.3 g/in^3; wherein the wall flow monolith has a wall porosity of at least 50% with an average pore size of at least 5 microns.

(PO Appeal Br. 34, Claims App'x.)

The term "NOx" refers to nitrogen oxides. ('597 patent, col. 1, l. 9.) As stated above, "SCR" is Selective Catalytic Reduction. ('597 patent, col. 1, l. 6–7.)

Patent Owner's Appeal

Patent Owner contests the Examiner's rejection of claims 1–15 under 35 U.S.C. § 103(a) as follows:

I. Claims 1–8, and 10–15 as obvious over Schafer-Sindlinger[5] and Ohno '351;[6]

II. Claim 9 as obvious over Schafer-Sindlinger,[7] Ohno '351, and Chapman;[8]

III. Claims 1–8, 10, and 12–15 as obvious over Ohno '351, Speronello,[9] and Tennison;[10] and

IV. Claim 9 as obvious over Ohno '351, Speronello, Tennison, and Chapman.

(PO Appeal Br. 2.)

Patent Owner relies on the following declaration evidence in support of the patentability of the claims (PO Appeal Br. 36–37, Evidence App'x):

Declaration of Gary L. Haller, Ph.D. Under 37 C.F.R. § 1.132 dated January 24, 2012 ("Haller Decl.");

Declaration of Joseph A. Patchett Under 37 C.F.R. § 1.131 dated February 12, 2012 ("Patchett 131 Decl.");

---

[5] United States Patent Application Publication US 2002/0039550 A1, published on April 4, 2002.
[6] WO 02/26351 A1 published April 4, 2002, citations to English translation of Record. We further observe that this prior art was not raised in the three *Inter Partes* Review proceedings discussed above.
[7] United States Patent Application Publication US 2002/0039550 A1, published on April 4, 2002.
[8] WO 01/96717 A1 published on December 20, 2001.
[9] U.S. Patent 5,516,497 issued May 14, 1996.
[10] U.S. Patent 6,928,806 B2 issued August 16, 2005.

Declaration of Joseph C. Dettling, Ph.D. Under 37 C.F.R. § 1.131 dated February 4, 2012 ("Dettling Decl.");

Declaration of Elizabeth A. Przybylski, Ph.D. Under 37 C.F.R. § 1.131 dated February 3, 2012 ("Przybylski Decl.");

Declaration of Joseph C. Dettling, Ph.D. Under 37 C.F.R. § 1.132 dated October 16, 2012 ("Second Dettling Decl.");

Declaration of Joseph A. Patchett, Ph.D. Under 37 C.F.R. § 1.132, dated October 5, 2012 ("Patchett Decl.");

Declaration of Joseph J. Farrauto, Ph.D. Under 37 C.F.R. § 1.132 dated June 27, 2012 ("Farrauto Decl.");

Second Declaration of Gary L. Haller, Ph.D. Under 37 C.F.R. § 1.132 dated June 28, 2012 ("Second Haller Decl.");

Declaration of Chung-Zong Wan, Ph.D. Under 37 C.F.R. § 1.132 dated June 5, 2012 ("Wan Decl."); and

Second Declaration Under 37 C.F.R. § 1.132 of Joseph A. Patchett Ph.D., dated October 11, 2013 ("Second Patchett Declaration").

In support of the above rejections, JMI relies on the following declaration evidence in addition to the prior art cited above (JMI Resp't. Br. iv–vi, Evidence App'x):

Declaration (A) By Philip Blakeman, Ph.D., Under 37 C.F.R. § 1.132 dated January 3, 2012 ("Blakeman Decl.");

Second Declaration (E) By Philip G. Blakeman, Ph.D., Under 37 C.F.R. § 1.132 dated November 14, 2012("Second Blakeman Decl.");

Declaration (C) By Andrew P. Walker, Ph.D., Under 37 C.F.R. § 1.132 dated February 24, 2012 ("Walker Decl.");

Declaration (D) By Raj Rajaram, Ph.D. Under 35 U.S.C. § 1.132 dated July 30, 2012 ("First Rajaram Declaration"); and

Second Declaration (H) By Raj Rajaram, Ph.D. Under 35 U.S.C. § 1.132 dated March 7, 2014 ("Second Rajaram Declaration").

FINDINGS OF FACT ("FF")

1. Schafer-Sindlinger discloses a process for reducing nitrogen oxides produced from an internal combustion engine by selective catalytic reduction (SCR) on a reduction catalyst using ammonia as the reductant. (¶ 1.)
2. Schafer-Sindlinger discloses that the final zeolite SCR catalyst is applied as a coating to honeycomb structures made of ceramic or metal, such as cordierite. (¶¶ 24, 38.)
3. Ohno '351 discloses a catalyst-carrying filter for purifying the exhaust gas of an engine that is "capable of effective and efficient removal by oxidation of carbon monoxide (CO) and hydrocarbon (HC) and reduction of nitrogen oxide (NOx) contained in exhaust gas." (Ohno '351 1, ¶ 1.)
4. Ohno '351 discloses a wall-flow filter in the form of a silicon carbide (SiC) sintered support that contains cells, where one end of the cell is sealed, and the open ends are arranged to form a checkered pattern of the open and closed ends. (Ohno '351 7–8, Figs. 1(a), 1(b).)
5. Ohno '351 discloses that various impregnation methods may be used to impregnate a ceramic support with catalyst to produce a catalyst-carrying filter, including an incipient wetness method, where an aqueous solution of catalyst is dropped in small amounts on the ceramic support. (Ohno '351 22, ¶ 1.)
6. Ohno '351 discloses:

> The catalyst carrying filter 10 of the embodiment of the invention is used as an exhaust gas purifying

> filter. One such use is the usual honeycomb ceramic support 15, for example, a gasoline oxidation catalyst, ternary catalyst and diesel engine oxidation catalyst. Another use would be as a diesel particulate filter with the honeycomb alternately sealed in a checkered pattern.
>
> (Ohno '351 28, ¶ 2.)

7. Ohno '351 discloses:

> This diesel particulate filter (hereinafter, abbreviated as "DPF") itself would have the function of only accumulating particulates (particulate matter: PM) in the cell walls 12, but when it carries a catalyst, the hydrocarbon and carbon monoxide in the exhaust gas could be oxidized.
>
> Also, even in an oxidized atmosphere such as the diesel exhaust gas, if it carried a NOx selective reduction catalyst component that can deoxidize NOx or an occlusion catalyst component, it would be possible to deoxidize NOx.
>
> (Ohno '351 28, ¶¶ 3–4.)

8. Speronello discloses that metal-promoted zeolites can be used to promote the reaction of NO_x in the presence of ammonia to produce nitrogen and water over the competing reaction of ammonia with oxygen. (Col. 5, ll. 5–12.)

9. Speronello discloses SCR catalysts where the base metal used in connection with the zeolite is iron or copper. (Col. 5, ll. 40–46.)

10. While exemplifying flow-through filters, Speronello discloses that "[a]ny suitable physical form of the catalyst may be utilized." (Col. 7, ll. 10–57.)

11. Speronello discloses that the filter may be coated with a washcoat containing a slurry of fine particles of copper-promoted zeolite, and that the copper-promoted zeolite may be mixed with a binder and extruded into the honeycomb configuration, or formed in situ. (Col. 7, ll. 57–66, col. 8, ll. 46–55.)
12. Speronello discloses that zeolites may be selected to make the catalyst more resistant to sulfur poisoning, to have thermal and hydrothermal stability, and to have long life and efficiency. (Col. 6, ll. 17–49.)
13. Tennison discloses an emission control system with an oxidation catalyst upstream of a urea-based SCR catalyst and a particulate filter downstream of the SCR catalyst. (Col. 1, ll. 55–58, col. 4, ll. 39–42, Fig. 2A.)
14. Tennison discloses that "since the particulate filter is located downstream of the SCR catalyst, there is no risk of thermal damage to the SCR catalyst during filter regeneration and therefore separate cooling means are not required." (Col. 4, ll. 46–49.)

PRINCIPLES OF LAW

In responding to a *prima facie* case of obviousness, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. *In re Keller*, 642 F.2d 413, 426

(CCPA 1981); *In re Merck & Co., Inc*., 800 F.2d 1091, 1097 (Fed. Cir. 1986).

"[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). In addition, "[t]he prior art's mere disclosure of more than one alternative does not constitute a teaching away from any of these alternatives because such disclosure does not criticize, discredit, or otherwise discourage the solution claimed." *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004).

In order for a showing of unexpected results to overcome the teachings of the prior art, the results presented must be commensurate in scope with the claims. *See In re Kollman*, 595 F.2d 48, 55 (CCPA 1979).

"[W]hen 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).

Schafer-Sindlinger in view of Ohno '351

ISSUES

The Examiner found that Schafer-Sindlinger discloses a system for treatment of an exhaust stream comprising oxides of nitrogen including an oxidation catalyst, an injector providing ammonia or an ammonia precursor, and an SCR catalyst as recited in claim 1. (RAN 8–9.) The Examiner found that Schafer-Sindlinger discloses that the SCR catalyst is a metal-promoted zeolite catalyst that is preferably applied to honeycomb structures made of

ceramic or metal. (*Id.*) The Examiner found that Schafer-Sindlinger is silent as to the pore size, porosity, and structural passages of the honey comb structure and therefore lacks of a teaching of the claim limitations. (*Id.* at 9.) The Examiner found that Ohno '351 discloses an SCR filter substrate in the form of a wall-flow monolith, the same type that is claimed, which provides minimal loss of exhaust gas pressure. (*Id.*) The Examiner concluded that it would have been obvious to have utilized the wall-flow monolith of Ohno '351 as the filter substrate for the SCR catalyst in Schafer-Sindlinger "in order to provide an SCR filter having minimal loss of exhaust pressure." (*Id.*)

Regarding the recitation in claim 1 of a "washcoat" of the SCR catalyst, the Examiner found that Ohno '351 discloses providing a coating around the particles that form the monolith and prevents clogging of the pores. (*Id.* at 10.) The Examiner concluded that it would have been obvious to have provided the SCR catalyst of Schafer-Sindlinger in the manner taught by Ohno '351 in order to prevent clogging of the pores. (*Id.*)

Patent Owner contends that the Examiner improperly construed the term "washcoat" recited in the claims. (PO Appeal Br. 5–10.) Patent Owner argues that Ohno '351 teaches away from washcoats, because, according to Patent Owner, Ohno '351 explicitly avoids washcoats on wall-flow monoliths. (*Id.* at 10–11.) As a result, Patent Owner argues that there is no reason to modify Schafer-Sindlinger with Ohno '351. (*Id.* at 11–12.) Patent Owner argues that one of ordinary skill in the art would have recognized that wall-flow monoliths have alternately blocked channels that force exhaust gas to flow through the walls of the monolith, trapping soot, and increasing

system backpressure. (*Id.* at 12.) Patent Owner contends that Schafer-Sindlinger would be understood to refer to a flow-through substrate, and as such, the use of a wall-flow monolith would increase back pressure and be undesirable in Schafer-Sindlinger. (*Id.*) As a result, Patent Owner contends that the rejection lacks rational underpinning. (*Id.* at 12–13.) In addition, Patent Owner argues that Schafer-Sindlinger is directed to improving the SCR reaction and is not concerned with filtration and back pressure. (*Id.* at 13.) Patent Owner argues also that Schafer-Sindlinger discloses SCR catalyst loadings up to 200 g/l while Ohno '351 discloses loading of thin films of at most 30 g/l, and that the Examiner and Requester fail to explain why one of ordinary skill in the art would have reduced the catalyst loading levels in Schafer-Sindlinger, which would reduce the conversion of NO_x in Schafer-Sindlinger's system. (*Id.*)

Patent Owner additionally contends that no evidence has been provided to support the position that the "conventional honeycomb structure" disclosed in Schafer-Sindlinger is a wall-flow monolith, pointing to passages in Schafer-Sindlinger that allegedly support the position that the structure disclosed in Schafer-Sindlinger is a flow-through structure. (*Id.* at 14–16.)

Requester contends that the Examiner properly found that the only structural feature imparted by the term "washcoat" is a coating, which is taught in Ohno '351. (JMI Resp't Br. 2–8.) Requester contends that the Examiner's rationale combining Schafer-Sindlinger with Ohno '351 is consistent with Ohno '351, and specifically the disclosure therein of a catalyst-coating technique for a filter that minimizes pressure loss. (*Id.* at 8–

9.) Requester argues that one of ordinary skill in the art would not have viewed Schafer-Sindlinger's disclosure of honeycomb structures as limited to flow-through substrates and that there is no disclosure in Schafer-Sindlinger that a wall-flow substrate could not be used as the SCR catalyst support in the system. (*Id.* at 9.) Requester contends that nothing in Ohno '351 restricts the type of washcoat or the manner of forming a further washcoat coating on the alumina film. (*Id.* at 10.) Requester contends that Ohno '351 expressly references a slurry carrying a catalyst when discussing formation of the catalyst on the catalyst carrying film. (*Id.*) In this regard, Requester contends that Patent Owner's contentions of the manner in which zeolite crystals are grown does not lead to the conclusion that it would not have been possible to use a metal promoted zeolite with the filter of Ohno '351. (*Id.*, citing Second Blakeman Decl. ¶ 9.)

Accordingly, the issue with respect to this rejection is whether it would have been obvious to have used a washcoat of SCR catalyst in a wall-flow monolith in an emission treatment system in view of the combined teachings of Schafer-Sindlinger and Ohno '351.

ANALYSIS

After consideration of the evidence of record, we agree with the Examiner that it would have been obvious to have utilized the wall-flow monolith taught by Ohno '351 as the SCR filter substrate of Schafer-Sindlinger.

"washcoat"/teaching away

Initially, we are not persuaded by Patent Owner's contentions that Ohno '351 does not disclose an SCR catalyst washcoat as recited in the claims. We observe that a similar argument was made in the appeal of the merged reexaminations regarding the term "slurry-loaded washcoat" and rejected by this same panel. (*See* Decision on Appeal in 2017-006009, 14, 18–19.) Because the thrust of Patent Owner's arguments and evidence are the same with respect to the term "washcoat," we do not see a need to repeat the bulk of that discussion here.

We emphasize that although the '597 Patent discusses coating the SCR catalysts on a wall-flow monolith in terms of an aqueous slurry (*see* col. 5, ll. 30–33), the '597 Patent does not link the use of an aqueous slurry to the desired attributes of the catalyst composition coated on the wall-flow monolith to impart a particular meaning to the term "washcoat." We have considered all the evidence of record in this appeal and in particular both Patent Owner and JMI's declaration evidence and evidence cited therein regarding whether the term "washcoat" imparts particular structural characteristics to the claims that distinguish it from the prior art. (*See, e.g.*, Haller Decl. ¶¶ 13, 14; Farrauto Decl. ¶¶ 13–19, 22–24; Dettling Decl. ¶ 23; Patchett Decl. ¶¶ 11, 14; Second Haller Decl. ¶ 20; Blakeman Decl. ¶ 5; Second Blakeman Decl. ¶ 8.) With respect to the extrinsic evidence, we find also that the weight of the extrinsic evidence is consistent with and favors the Examiner's interpretation of "washcoat."

Specifically, Requester has provided evidence that the term "washcoat" was understood at the time to be generally related to coatings

formed by a variety of methods. (Blakeman Decl. ¶ 5; Second Blakeman Decl. ¶ 8, citing U.S. Patent Application Pub. No. 2003/0040425, para. 43 (Exhibit Al); Heck, R.M. et al., "Catalytic Air Pollution Control," 5, 6, 18 (2d ed. 2002) (ExhibitA-2), Plummer, Jr., H.K. et al., "Measurement of Automotive Catalyst Washcoat Loading Parameters by Microscopy Techniques," 5 Microsc. Microanal., 267 (1999) (Exhibit A-3).)

Patent Owner's citation to and discussion of extrinsic evidence purporting to support the position that "washcoat" is limited to slurry-derived coatings is not persuasive. (Farrauto Decl. ¶¶ 22–23, citing Catalytic Air Pollution Control, 19, Fig. 2.2; Catalysis from A to Z Concise Encyclopedia (2000), 626; United States Patent No. 6,617,276, United States Patent 6,927,189, and Diesel Net Article "Catalyzed Diesel Filters.") In particular, the Farrauto Declaration states only that Catalytic Air Pollution Control "suggests" that a washcoat is a slurry loaded layer of oxide particles, which is not sufficient to support a definition. (Farrauto Decl. ¶ 22.) Regarding the discussion in the Farrauto Declaration of the definition in "Catalysis from A to Z," we find insufficient explanation as to why the definition of a "washcoat" as a "thin layer of heterogeneous catalyst applied on a structured support" in conjunction with the discussion of porous particles necessarily means that the washcoat is produced from a slurry. The Farrauto Declaration's citation to United States Patent No. 6,617,276 and United States Patent 6,927,189 does not shed any further light on this issue. While the DieselNet article does appear to discuss one view that the term "washcoat" implicates the presence of a slurry, in view of the other references of record having a broader view of the scope of the term

"washcoat,"[11] we are not persuaded that this discussion rises to the level of a definition of "washcoat" when other cited publications implicate a broader construction. Importantly, Patent Owner has not established that the DieselNet Article would express the view of the ordinary skilled artisan at the time of the invention as it appears to have a 2005 publication date, while the '597 Patent was filed in 2003.

In sum, as in the prior appeal of the merged reexaminations, we interpret "washcoat" to mean that a coating of SCR catalyst is present on the wall-flow monolith. Accordingly, we agree with the Examiner that a "washcoat" does not mean a particular catalytic structure, but rather merely indicates the presence of a coating of catalytic material on the wall-flow monolith and, as such, does not possess a structure that would distinguish it from the prior art. (RAN 7.)

Patent Owner argues that Ohno '351 requires the formation of fibril or hair-like structures in the coatings in order to support the position that there is a particular structural difference imparted by the coating methods disclosed in Ohno '351 as opposed to wash coating and that Ohno '351 teaches away. (PO Appeal Br. 8–11.) However, as observed by JMI, the claims do not preclude the formation of such structures. (JMI Resp't Br. 6.) Accordingly, Patent Owner's arguments in this regard are not persuasive.

[11] Second Blakeman Decl. ¶ 8, citing U.S. Patent Application Pub. No. 2003/0040425, para. 43 (Exhibit Al); Heck, R.M. et al., "Catalytic Air Pollution Control," 5, 6, 18 (2d ed. 2002) (ExhibitA-2), Plummer, Jr., H.K. et al., "Measurement of Automotive Catalyst Washcoat Loading Parameters by Microscopy Techniques," 5 Microsc. Microanal., 267 (1999) (Exhibit A-3).

As to Patent Owner's arguments regarding Ohno '351's avoidance of washcoats, we previously addressed this argument in the merged reexaminations. (*See* Decision on Appeal in 2017-006009, 16–19.) Briefly, we do not find Patent Owner's arguments persuasive because Ohno '351 discusses washcoats with respect to prior art coatings and substrates, and because Ohno '351 is not limited in its catalyst coating method. (FF 5.) Thus, we have not been directed to sufficient evidence that applying a washcoat of SCR catalyst as disclosed in the prior art would render the wall-flow monolith of Ohno '351 inoperable.

Obviousness/reason to combine

We are not persuaded by Patent Owner's argument that it would not have been obvious to have used the wall-flow monolith honeycomb substrates with SCR catalyst disclosed in Ohno '351 as the SCR catalysts in Schafer-Sindlinger. In particular, in view of the evidence of record, we are not persuaded by Patent Owner's declaration evidence that the Examiner's rejection is based on an incorrect assumption that Schafer-Sindlinger would be viewed as being limited to flow-through filters. (PO Appeal Br. 11–16, Dettling Decl. ¶ 24, Patchett Decl. ¶ 19.) As explained by Requester's expert, one of ordinary skill in the art would not have read Schafer-Sindlinger to exclude a soot filter in view of the knowledge in the art at the time that soot filters had been incorporated into exhaust treatment systems in order to meet applicable filtration and NOx control requirements. (Second Blakeman Decl. ¶ 17, citing Hüthwohl, G. et al. "The SCRT® System-A Combination Particle Filter with SCR Catalyst-Enables Both Particle and

NOx Emission to be Reduced Simultaneously in Commercial Vehicle Diesel Engines." (Exhibits D-1 (translation), E-1) ("Hüthwohl"), p. 1, ll. 2–7, p. 2, ll. 7–12, p. 3, ll. 21–30.) Indeed, Ohno '351 provides direct support for this recognition in the art. (FF 3, 6, 7.) Therefore, we are of the view that the weight of the evidence favors the Examiner's findings and conclusions.

We are also not persuaded by Patent Owner's contention that the catalyst loadings and pore sizes of the honeycomb structures of Schafer-Sindlinger indicates that the Schafer-Sindlinger's reference to "honeycomb" structures only contemplates flow-through supports and not wall-flow supports. (PO Appeal Br. 13–15, citing Dettling Decl. ¶¶ 20, 25; Patchett Decl. ¶ 19.) That is, Patent Owner's discussion of Schafer-Sindlinger's disclosure of catalyst loadings of 196 g/l (Schafer-Sindlinger ¶ 38) and Table 3 of Ohno '351 disclosing catalyst loadings below 30 g/l as evidence of the different filter types (*id.*), does not take into account what one of ordinary skill in the art would have understood from the prior art as a whole. Schafer-Sindlinger discloses reducing nitrogen oxides by selective reduction catalysts on honeycomb structures, and is not limited to its examples. (FF 1, 2.) In view of the discussion above, and as pointed out by the Examiner, Ohno '351 is not limited to the particular examples disclosed in it, and would not have dissuaded the ordinary skilled artisan from determining the appropriate catalyst loadings including those recited in the instant claims. (RAN 50–51; Second Blakeman Decl. ¶¶ 18–20.)

Accordingly, the Examiner's rationale that one of ordinary skill in the would have looked to Ohno '351 to incorporate wall-flow filters as the substrate for the SCR catalyst disclosed in Schafer-Sindlinger in order to

reduce back pressure is supported by a preponderance of the evidence on this record.

Claims 3–6

For claims 3–6, Patent Owner argues also that Ohno ’351 does not disclose a washcoat. (PO Appeal Br. 18–19.) Patent Owner contends that the co-catalyst disclosed in Ohno ’351 does not enable the use of zeolites by an *in situ* method, and if Ohno ’351 is not limited to an *in situ* method, the Examiner does not set forth sufficient articulated reasoning on how to form a zeolite in the context of Ohno ’351 while maintaining the properties of the filter. (PO Appeal Br. 20.) Patent Owner further contends that evidence of record demonstrates that modifying Schafer-Sindlinger with Ohno ’351 would render Schafer-Sindlinger unsatisfactory for its intended purpose of reducing NOx due to the presence of the platinum group metal catalyst in Ohno ’351. (*Id.*)

We are not persuaded by Patent Owner’s contentions because as discussed above, we are not persuaded that Ohno ’351 fails to disclose a washcoat as recited in the claims. Regarding Patent Owner’s arguments that Ohno ’351 requires an *in situ* zeolite formation method and an oxidation catalyst, we are also not persuaded that Ohno ’351 requires either the *in situ* zeolite formation method or the presence of an oxidation catalyst.

We addressed and rejected similar contentions in the merged reexamination appeal. (*See* Decision on Appeal in 2017-006009, 18–19, 20–21.) That is, given that Ohno ’351 does not limit the methods of coating a catalyst on a wall-flow filter, we are not persuaded that Ohno ’351 would

require *in situ* zeolite formation. Ohno '351 also does not require an oxidation catalyst, as Ohno '351 expressly discloses an exhaust gas purifying filter and that reduction of NOx is an objective according to the invention. (FF 3.)

Claim 11

Regarding claim 11, which recites that "the oxidation catalyst is disposed on a honeycomb flow through monolith substrate or an open cell foam substrate," Patent Owner argues that the term "conventional honeycomb structure" in Schafer-Sindlinger is limited to a flow-through substrate, such that the Examiner cannot pick and choose from Schafer-Sindlinger without some articulated reasoning with rational underpinning to choose that the SCR catalyst be on a wall-flow monolith and that the oxidation catalyst be on a flow-through substrate. (PO Appeal Br. 21.)

In rejecting claim 11, the Examiner points to paragraph 16 of Schafer-Sindlinger, which discloses that the oxidation catalyst is applied to a "conventional honeycomb structure" as a carrier. (RAN 10, 56.) We are not persuaded by Patent Owner's argument. That is, as discussed above, the Examiner's rationale for applying the SCR catalyst on a wall-flow filter is supported by the evidence of record. The contention that one of ordinary skill in the art would not have understood that the oxidation catalyst would have been applied to a flow-through substrate is not persuasive. Patent Owner's contention that a conventional honeycomb structure does not include a flow-through substrate is inconsistent with Patent Owner's own arguments.

Claim 9

Claim 9 is rejected as obvious over the combination of Schafer-Sindlinger and Ohno ’351, further in view of Chapman. Patent Owner does not set forth any additional arguments regarding claim 9, which depends from claim 1. (PO Appeal Br. 22.) Accordingly, we affirm the rejection of claim 9 for similar reasons as discussed above.

Ohno ’351, Speronello and Tennison

ISSUES

The Examiner found that Ohno ’351 discloses an SCR catalyst that permeates the walls of a wall-flow monolith as required by claim 1. (RAN 17.) The Examiner found that Ohno ’351 is silent to disclosing the concentration of the SCR catalyst and the type of SCR catalyst used. (RAN 17–18.) The Examiner found that Speronello discloses that ammonia-based catalysts are known in the art to reduce NOx present in engine exhaust and that as a result of Speronello’s disclosure, the amount of SCR catalyst is a result-effective variable. (RAN 18.) The Examiner concluded that it would have been obvious to one of ordinary skill in the art to have optimized the amount of the SCR catalyst composition used in the filter of Ohno ’351 in order to provide an effective amount of NOx reduction to have arrived at the claimed amounts. (RAN 18.) The Examiner found that Ohno ’351 discloses providing coating (washcoat) around the particles that form the monolith. (RAN 19, citing Ohno ’351, 12 ¶ 4.) The Examiner found that the combination of Ohno ’351 and Speronello is silent as to an oxidation catalyst located upstream of the wall-flow monolith having an SCR catalyst.

(RAN 18.) The Examiner found that Tennison discloses a system to control emission of NOx and particle matter from a diesel engine, with an oxidation catalyst, injector for reductant, and an SCR catalyst downstream of the injector, the same elements recited in the claims. (*Id.* at 18–19.) The Examiner concluded that it would have been obvious to have arranged a system as in Tennison utilizing the combined teachings of Ohno '351 and Speronello in order to provide an emission system with improved NOx conversion efficiency and/or reduce tail pipe emissions of ammonia used by the SCR catalyst. (*Id.* at 19.)

In addition to the arguments addressed above that Ohno '351 teaches away from washcoats and that Ohno '351 requires an oxidation catalyst (PO Appeal Br. 23–24), Patent Owner contends that there are multiple reasons to avoid combining Ohno '351 with Speronello, including increasing back pressure and that Speronello warns against placing SCR catalyst on a substrate that will promote mixing between channels. (PO Appeal Br. 25.) Patent Owner argues that Tennison teaches away from the arrangement of the SCR catalyst in the claims by teaching the SCR catalyst is positioned upstream of the filter to eliminate the risk of thermal damage to the SCR catalyst. (*Id.* at 25–26.)

Patent Owner contends that Speronello is concerned with flow-through substrates and the lack of opportunity of gas mixing between channels in flow-through substrates, which is contrary to wall-flow monolith filters such that one of ordinary skill in the art would not have used the SCR catalyst disclosed in Speronello in a wall-flow monolith filter as disclosed by Ohno '351. (*Id.* at 26–27.) Patent Owner further contends that because

Speronello discloses the desire to avoid pressure drop, and one of ordinary skill in the art understands that soot filters increase back pressure in engines, one of ordinary skill in the art would not have consulted Speronello in modifying Ohno '351. (*Id.* at 27.) Regarding claims 3–6, Patent Owner contends that one of ordinary skill in the art would recognize that the catalyst materials recited in those claims would be a poor choice of catalysts that would be subject to extreme conditions during regeneration. (*Id.* at 27–28.)

JMI contends that providing exhaust system components including an oxidation catalyst and ammonia injector as taught by Tennison upstream of the SCR catalyzed filter of Ohno '351 would have been obvious as nothing more than utilizing the filter in the manner specified by Ohno '351. (JMI Resp't Br. 11, 12–13.) In particular, JMI contends that Patent Owner ignores the actual teachings in the prior art, such as the teaching in Ohno '351 of an SCR catalyst on a wall-flow filter, and system configurations where oxidation catalysts and ammonia injectors were upstream of an SCR catalyst filter. (JMI Resp't Br. 13–14.)

JMI argues that Ohno '351 discloses applying an SCR catalyst to high-porosity filters to reduce oxides of nitrogen and Speronello discloses metal zeolite SCR catalysts and that one of ordinary skill in the art would not have been dissuaded from using the SCR compositions of Speronello as the SCR catalyst in the filter of Ohno '351, since the functional requirements of the catalyst for each type of filter would be the same. (*Id.* at 14–15.) JMI contends that the evidence of record does not demonstrate that the regeneration conditions of the filter would indicate that the catalysts

disclosed in Speronello would be a poor choice for such a system. (*Id.* at 15.)

Thus, the dispositive issue is:

Considering the evidence as a whole, would it have been obvious to one of ordinary skill in the art to have used the SCR catalyst in a wall-flow filter as disclosed in Ohno '351 and Speronello in the emission treatment system disclosed in Tennison?

ANALYSIS

Ohno '351 and Speronello

We are not persuaded that one of ordinary skill in the art would have avoided the combination of Ohno '351 and Speronello based on the disclosure in Speronello of a flow-through filter. We considered and were unpersuaded by similar arguments made by Patent Owner in the merged reexamination appeal. (*See* Decision on Appeal in 2017-006009, 15, 19–20.) With particular reference to Patent Owner's argument that Speronello discloses flow-through substrates such that there is no opportunity for gas mixing between the channels as a reason that one of ordinary skill in the art would not combine Ohno '351 and Speronello, we emphasize, as in the merged reexaminations, that both wall-flow monolith and flow-through substrates have been used in reduction of NOx gases from engine exhaust. (FF 3, 7, 8–12.) In addition, neither Ohno '351 nor Speronello limit the applications for the filters disclosed therein. (FF 3, 7, 10.) Thus, that Speronello discloses certain attributes of flow-through filters does not mean that one of ordinary skill in the art would have been dissuaded from using such catalyst in conjunction with Ohno's wall-flow monolith filters.

Combination of Ohno '351, Speronello, and Tennison

Regarding the combination of Ohno '351, Speronello, and Tennison, we are not persuaded by Patent Owner's argument that one of ordinary skill in the art would have been discouraged from arranging the SCR catalyst placed in the wall-flow monolith filter in the manner specified in the claims due to the conditions experienced during regeneration disclosed in Tennison. (PO Appeal Br. 25–26, citing Dettling Decl. ¶ 23 and Patchett Decl. ¶ 18.) Specifically, as pointed out by JMI, copper-promoted zeolites were well established as being useful SCR catalysts in exhaust treatment systems. (JMI Resp't Br. 15, Second Blakeman Decl. ¶ 23, citing Schafer-Sindlinger ¶ 12.) Similarly, Patent Owner's comments regarding the disclosure in Speronello that one copper zeolite deactivated during aging (PO Appeal Br. 27–28, citing Speronello, col. 16, ll. 40–43) are not persuasive because Patent Owner has not articulated why one of ordinary skill in the art would have viewed all types of SCR zeolite catalysts as inapplicable to a filter, when such catalysts were known in the art to be used in similar systems. (JMI Resp't Br. 15, Second Blakeman Decl. ¶ 23, citing Schafer-Sindlinger ¶ 12.)

In addition, Ohno '351 discloses that the combustion temperature of soot can be lowered if the DPF filter carries a catalyst, reducing the energy required for regeneration. (Ohno '351, 28.) Accordingly, we are not persuaded that the disclosure in Tennison regarding the regeneration conditions required to regenerate the particulate filter would teach away from the combination of Ohno '351 and Speronello, with a reliance on

Tennison for adding an oxidation catalyst and reductant inlet upstream of the SCR catalyst. (*See* RAN 70; FF 13, 14.)

Claims 3–6

Patent Owner makes similar arguments with respect to claims 3–6 as addressed above. (PO Appeal Br. 27–28.) Patent Owner's arguments are unpersuasive for similar reasons as expressed above.

Claim 9

Claim 9 is rejected as obvious over the combination of Ohno '351, Speronello, Tennison, and further in view of Chapman. Patent Owner does not set forth any additional arguments regarding claim 9, which depends from claim 1. (PO Appeal Br. 29.) Accordingly, we affirm the rejection of claim 9 for similar reasons as discussed above.

Unexpected Results

Patent Owner argues that the advantages provided by the claimed invention of lowering the soot burning temperature of soot accumulated on the filter while not increasing system back pressure and having adequate filtration efficiency, particularly relevant to claims 3–6, which recite particular components of the zeolite and base metal component, must be considered in the obviousness analysis. (PO Appeal Br. 16–18, 30.) Patent Owner argues that the examples of the '597 Patent show the unexpected nature of the claimed invention relative to the catalysts disclosed in Ohno '351. (PO Appeal Br. 30, citing Patchett Decl. ¶¶ 15–17.) Patent Owner argues that it has demonstrated the superiority of zeolites and base metals in

claims 3–6 as compared to vanadia-titania SCR catalysts, which according to Patent Owner is the only SCR catalyst on a filter described in this reexamination. (PO Appeal Br. 30, citing Second Haller Decl. ¶¶ 25–26, referencing Example 3 of the '107 Patent (corresponding also to Example 3 of the '597 Patent).) In addition, Patent Owner contends that Speronello presents data that shows poor hydrothermal stability of copper zeolites. (PO App. Breal 30.)

JMI argues that the '597 Patent, and in particular, Example 3, only compares soot burning temperatures of known catalysts, and in addition, Example 3 does not test soot burning temperatures of a catalyst on a filter. (JMI Resp't Br. 15–16.) JMI contends also that the Rajaram Declarations demonstrate that the results presented in Example 3 of the '597 Patent are not relevant because vanadia-titania catalysts tested in the First Rajaram Declaration (the same as those tested in Example 3 of the '597 Patent) are more effective at lowering soot burning temperature than copper beta zeolite catalysts without additional copper sulfate. (JMI Resp't Br. 16, citing First Rajaram Decl. ¶ 10, Second Rajaram Decl. ¶ 12.) JMI argues that the lower temperatures achieved by adding copper sulfate to a zeolite and base metal catalyst are not relevant because the claims of the '597 Patent are not limited to catalysts that include copper sulfate, nor are they limited to a particular amount of sulfate, or a particular amount of copper. (*Id.*) As to Patent Owner's argument that the First Rajaram Declaration does not use actual soot and the vanadia catalyst tested are unreliable, JMI responds that Patent Owner has claimed to have demonstrated unexpected results for soot without specifying the source of soot, and claims to have demonstrated unexpected

results of catalysts compared to vanadia catalysts in general. (*Id.* at 16–17.) In addition, JMI contends that the Second Rajaram Declaration presents results of experiments to render Patent Owner's arguments moot. (*Id.* at 17, citing Second Rajaram Decl. ¶¶ 7, 8, 10.) JMI contends that one of ordinary skill in the art would not have been surprised that Example 4 of the '597 Patent shows that a wall-flow filter more effectively filtered particles than a flow-through substrate. (*Id.* at 17–18, citing Second Rajaram Decl. ¶ 16.)

We disagree with Patent Owner that the Patchett Declaration and the examples of the '597 Patent are sufficient to demonstrate unexpected results with respect to the claims on appeal. Regarding the Patchett Declaration, (Patchett Decl. ¶¶ 15–17), we agree with JMI that testing the platinum alumina catalysts disclosed in Ohno '351 does not adequately demonstrate unexpected results with respect to the zeolite and base metal and the ability to act as SCR catalysts in a wall-flow monolith, as other references are relied upon for the particular SCR catalysts, including those in claims 3–6, and according to Patent Owner, the platinum catalysts disclosed by Ohno '351 are oxidation catalysts. (JMI Resp't Br. 18; Farrauto Decl. ¶ 21.)

In this regard, to the extent the statements made by Patent Owner's declarants that the zeolite and base metal SCR catalysts produce surprising results of lowering the soot burning temperature, providing adequate NOx conversion performance, and adequate filtration efficiency are based on the results in the Patchett Declaration, they are not persuasive. The additional declaration evidence relied on by Patent Owner is also not persuasive. (PO Appeal Br. 30, Second Haller Decl. ¶ 27, Patchett Decl. ¶¶ 20–22; Dettling Decl. ¶ 28.) In particular, the declaration evidence does not provide

sufficient support for Patent Owner's position, because the evidence is not commensurate in scope with the claims and in view of the other evidence of record as further discussed below.

Regarding the soot oxidation temperature, none of the claims recite a particular soot oxidation temperature for the emission treatment system. The Second Haller Declaration references Example 3 of the '597 Patent. Example 3 compares particulate removal of 6% by weight lube oil and 14% by weight carbon black of a "reference composition" of TiO_2 – 10 weight percent WO_3- 2 weight percent V_2O_5 catalyst with a catalyst composition copper-exchanged beta zeolite (containing 2 wt. % of copper), additional $CuSO_4$ (sufficient to provide 9.5 wt.% of copper), and 7 wt.% ZrO_2 and de-ionized water (wt. % based on the weight of the beta zeolite). (Col. 12, ll. 27–34, col. 13, l. 35 – col. 14, l. 20.) Thus, the results appear to be limited to specific conditions that are not recited in the claims.

The '597 Patent states that the reference composition and the copper-exchanged beta zeolite were both effective at burning lube oil, but that the copper-exchanged beta zeolite lowered the soot combustion temperature. (Col. 14, ll. 11–16.) However, the Second Rajaram Declaration[12] tested the effect of 2% copper-beta zeolite with and without the presence of $CuSO_4$ on

[12] Patent Owner's contentions that the First Rajaram Declaration relied on by the Examiner is unclear and unreliable and that the vanadia-titania catalyst used in the Rajaram Declaration is not representative of commercially available catalysts at the time of the invention (PO Appeal Br. 30–32, citing Second Patchett Decl. ¶¶ 8–13) are not persuasive in view of the Second Rajaram Declaration, which provides sufficient detail commensurate with the details provided in the '597 Patent itself. (Second Rajaram Decl. ¶¶ 7, 10.)

the temperature of a mixture of lube oil and carbon black, and the results demonstrate that, without the presence of $CuSO_4$, the soot burning temperature was 757°C, which did not change significantly from the cordierite support without catalyst at 740°C. (Second Rajaram Decl. ¶¶ 6–9, 11–14, Ex. H1.) The claims do not recite the presence of $CuSO_4$. Accordingly, the position that the emission system recited in the claims provides a lower soot oxidation temperature is not commensurate in scope with the claims, and is not supported by the preponderance of the evidence on this record.

In addition, while providing evidence that a zeolite/base metal catalyst composition has different results depending on the substrate on which it is disposed, Example 4 does not provide sufficient evidence to support Patent Owner's position that the NOx conversion performance and adequate filtration efficiency are surprising and unexpected. Example 4 of the '597 Patent is an evaluation of filtration efficiency of NOx conversion and particulate removal for coated soot filters, where an SCR catalyst containing a copper containing zeolite was coated on to either a wall-flow monolith substrate (Catalyst A1, *see* Example 1, col. 12, ll. 27–34) or a flow-through monolith substrate (Catalyst D1, *see* Example 1, col. 12, ll. 59–67). (Col. 14, ll. 20–col. 15, l. 17.) The results of the experiment are shown in Table 1 of the '597 Patent.

The '597 Patent discloses that the results show that disposing the SCR catalyst composition on the wall-flow monolith demonstrate integrated high NOx and particulate removal efficiency. (Col. 15, ll. 18–46.) The comparison of total particulate removal percentage between the flow-

through and wall-flow monoliths does not demonstrate unexpected results, because other evidence on this record presented by Patent Owner indicates that one of ordinary skill in the art would *not* have expected that the total particulate removal percentage would be high in a flow-through monolith because the flow-through monolith is not used to capture particulates. (Dettling Decl. ¶ 20.) Accordingly, it would have been reasonably expected that the SCR catalyst composition on the wall-flow monolith would have higher particulate removal efficiency. For these reasons, we are not persuaded by Patent Owner's position that integrated NOx removal, particulate removal, filtration efficiency and acceptable back pressure maintenance utilizing a wall-flow monolith as required by the claims are evidence of unexpected results. (Second Patchett Decl. ¶ 14.)

Thus, while we attribute some weight to the opinions of Patent Owner's declarants as outlined above as to the surprising and unexpected nature of the sustained particulate removal efficiency of the wall-flow monoliths containing an SCR catalyst falling within the scope of the claim, such opinions are unconvincing when considered in light of the scope of the claims, the underlying evidence relied on in support thereof, and the teachings of the prior art discussed above.

Skepticism/Industry Recognition and Praise

Patent Owner argues further that it proceeded contrary to accepted wisdom by permeating the walls of a wall-flow filter with a catalyst because substrate suppliers disfavored this approach and the "literature also suggested proceeding in a direction opposite of what the Patent Owner did."

(PO Appeal Br. 32, citing Dettling Decl. ¶¶ 11–16, 28; Patchett Decl. ¶¶ 21–22.)

Patent Owner contends that the ’107 Patent, which issued as a divisional of the ’597 Patent has received recognition and praise in the form of the 2011 Thomas Alva Edison Patent Award in the environmental category. (PO Appeal Br. 32–33; Patchett Decl. ¶ 23.) Patent Owner argues that Requester has praised the claimed invention of the ’597 Patent, in particular of claims 3–6. (PO Appeal Br. 33; Patchett Decl. ¶¶ 16, 17.)

JMI contends that Patent Owner has mischaracterized the cited literature, which demonstrates that considerations such as backpressure are not a problem when using high porosity filters. (JMI Resp’t Br. 18–19.) In addition, JMI contends that Patent Owner has mischaracterized the literature authored by JMI’s personnel as praising the invention claimed in the ’597 Patent. (*Id.* at 19.)

We agree with JMI. Initially, we observe, that while the cited paragraphs of the declaration testimony (e.g., Dettling Decl. ¶¶ 11–16) indicate that employing filters with high porosity was contrary to the filter manufacturer’s guidance at the time of the invention, Patent Owner does not provide evidence from such manufacturers to support this argument. In addition, although Patent Owner provides citations to references to support the position that the literature had expressed skepticism about the loadings of SCR catalysts and the effect on backpressure, the literature also appears to recognize that high porosity filters allow for higher loadings and acceptable back pressure. (RAN 86, citing Ohno ’351; Second Haller Decl. ¶ 17.) Further, we have not been directed to sufficient evidence to relate the Award

to the system recited in the claims. (*Id.* at 87.) With respect to Patent Owner's contentions that JMI praised the '597 Patent, we agree with JMI that there is no mention of the '597 Patent in the references cited by Patent Owner, and that Ohno '351 is evidence that SCR catalyst coated filters were known prior to the '597 Patent. (JMI Resp't Br. 19.)

Obviousness Conclusion

Accordingly, after weighing both the evidence in favor of obviousness and the evidence against obviousness of the subject matter of the claims as discussed above, we find that the evidence in favor of obviousness outweighs the evidence against obviousness, particularly in view of the disclosure in Speronello and Schafer-Sindlinger of the SCR catalyst compositions recited in the claims, the express suggestion in Ohno '351 to employ SCR catalysts in wall-flow monoliths, and the express disclosures in Schafer-Sindlinger and Tennison of using SCR catalysts on honeycomb supports in emission treatment systems.

JMI's Appeal

JMI contests the Examiner's refusal to reject claims 1–15 under 35 U.S.C. § 103(a) as follows:

V. Claims 1–8 and 10–15 as obvious over Hashimoto,[13] Ohno '351, and Schafer-Sindlinger;

[13] Hashimoto, S. et al., "SiC and Cordierite Diesel Particulate Filters Designed for Low Pressure Drop and Catalyzed, Uncatalyzed Systems," SAE Technical Paper Series, 2002-01-0322 (Mar. 2002).

VI. Claim 9 as obvious over Hashimoto, Ohno ’351, Schafer-Sindlinger, and Chapman;

VII. Claims 1, 2, 7, 8, and 10–15 as obvious over Hashimoto, Ohno ’351, and Tennison;

VIII. Claims 3–6 as obvious over Hashimoto, Ohno ’351, Tennison, and Speronello;

IX. Claim 9 as obvious over Hashimoto, Ohno ’351, Tennison, and Chapman;

X. Claim 11 as obvious over Ohno ’351, Speronello, and Chapman;

XI. Claims 1–8 and 10–15 as obvious over Schafer-Sindlinger and Nakanishi;[14]

XII. Claim 9 as obvious over Schafer-Sindlinger, Nakanishi, and Chapman;

XIII. Claims 1–8 and 10–15 as obvious over Schafer-Sindlinger, Araki,[15] and Heck;[16] and

XIV. Claim 9 as obvious over Schafer-Sindlinger, Araki, Heck, and Chapman.

(JMI Appeal Br. 4–6.)

[14] JP 09-173866 published July 8, 1997, citations to English translation of record.
[15] EP 0 766 993 A2 published April 9, 1997.
[16] Heck, R.M. et al., “Catalytic Air Pollution Control,” (2d ed. 2002) pp. 204–208.

Claim 11-Ohno '351, Speronello, and Chapman

Claim 11 is reproduced below (emphasis added):

> 11. The emission treatment system of claim 1, wherein the oxidation catalyst is disposed on a honeycomb flow through monolith substrate *or* an open cell foam substrate.

The Examiner found that Tennison discloses providing an oxidation catalyst upstream of the SCR catalyst, but does not disclose that the oxidation catalyst has a honeycomb structure. (RAN 21.) The Examiner also found that the '597 Patent does not admit oxidation catalysts on honeycomb structures were known in the art. (*Id.*)

JMI acknowledges that Tennison does not specify the support structure for its oxidation catalysts, but points out that the '597 Patent discloses that oxidation catalysts may be formed on metallic or ceramic foam substrates that "are well-known in the art." (JMI Appeal Br. 17, '597 Patent, col. 11, ll. 28–30.) JMI contends that claim 11 does not require an oxidation catalyst on a honeycomb substrate, but recites a choice of a honeycomb flow-through monolith substrate or an open cell foam structure as alternatives. (JMI Appeal Br. 17.) JMI contends that the use of a foam substrate to support an oxidation catalyst is nothing more than combining elements known in the art for the predictable result of supporting the oxidation catalyst in an exhaust treatment system. (*Id.* at 18.)

We agree with JMI. Claim 11 does not require a honeycomb flow through monolith substrate, but also allows for the oxidation catalyst to be disposed on an open cell foam substrate. As acknowledged in the '597 Patent, such substrates were well known in the art at the time of the

invention, and as such it would have been obvious to have placed the oxidation catalyst in Tennison on an open cell foam substrate.

Thus, the Examiner's reasons for declining to adopt the rejection is not consistent with the scope of claim 11. Accordingly, we reverse the Examiner's decision not to adopt the rejection of claim 11 as obvious over Ohno '351, Speronello, Chapman, and admitted prior art in the '597 Patent.

Remaining Proposed Rejections

Because the rejections discussed above are sufficient to address all of the claims appealed, we find it unnecessary to reach the remaining rejections advanced in JMI's appeal.

DECISION

We affirm the Examiner's decision to reject claims 1–15 as obvious over the prior art of record.

We reverse the Examiner's decision not to reject claim 11 as obvious over Ohno '351, Speronello, and Tennison.

TIME PERIOD FOR RESPONSE

This decision contains new grounds of rejection pursuant to 37 C.F.R. § 41.77(b) which provides that "[a]ny decision which includes a new ground of rejection pursuant to this paragraph shall not be considered final for judicial review." Correspondingly, no portion of the decision is final for purposes of judicial review. A requester may also request rehearing under 37 C.F.R. § 41.79, if appropriate, however, the Board may elect to defer

issuing any decision on such request for rehearing until such time that a final decision on appeal has been issued by the Board. For further guidance on new grounds of rejection, *see* 37 C.F.R. § 41.77(b)–(g). The decision may become final after it has returned to the Board. 37 C.F.R. § 41.77(f).

Section 41.77(b) of Title 37 of the Code of Federal Regulations also provides that the Owner, WITHIN ONE MONTH FROM THE DATE OF THE DECISION, must exercise one of the following two options with respect to the new grounds of rejection to avoid termination of the appeal as to the rejected claims:

> (1) *Reopen prosecution.* The owner may file a response requesting reopening of prosecution before the examiner. Such a response must be either an amendment of the claims so rejected or new evidence relating to the claims so rejected, or both.
>
> (2) *Request rehearing*. The owner may request that the proceeding be reheard under § 41.79 by the Board upon the same record . . . .

Any request to reopen prosecution before the examiner under 37 C.F.R. § 41.77(b)(1) shall be limited in scope to the "claims so rejected." Accordingly, a request to reopen prosecution is limited to issues raised by the new ground(s) of rejection entered by the Board. A request to reopen prosecution that includes issues other than those raised by the new ground(s) is unlikely to be granted. Furthermore, should the Owner seek to substitute claims, there is a presumption that only one substitute claim would be needed to replace a cancelled claim.

A requester may file comments in reply to Owner response. 37 C.F.R. § 41.77(c). Requester comments under 37 C.F.R. § 41.77(c) shall be limited

in scope to the issues raised by the Board's opinion reflecting its decision to reject the claims and the Owner's response under paragraph 37 C.F.R. § 41.77(b)(1). A newly proposed rejection is not permitted as a matter of right. A newly proposed rejection may be appropriate if it is presented to address an amendment and/or new evidence properly submitted by the Owner, and is presented with a brief explanation as to why the newly proposed rejection is now necessary and why it could not have been presented earlier.

Compliance with the page limits pursuant to 37 C.F.R. § 1.943(b), for all Owner responses and requester comments, is required.

The Examiner, after the Board's entry of Owner response and Requester comments, will issue a determination under 37 C.F.R. § 41.77(d) as to whether the Board's rejection is maintained or has been overcome. The proceeding will then be returned to the Board together with any comments and reply submitted by the Owner and/or Requester under 37 C.F.R. § 41.77(e) for reconsideration and issuance of a new decision by the Board as provided by 37 C.F.R. § 41.77(f).

Requests for extensions of time in this *inter partes* reexamination proceeding are governed by 37 C.F.R. § 1.956. *See* 37 C.F.R. § 41.77(g).

AFFIRMED; 37 C.F.R. § 41.77(b)

em

PATENT OWNER:

WOMBLE CARLYLE SANDRIDGE & RICE, LLP
ATTN: IP DOCKETING
P.O. BOX 7037
ATLANTA, GA 30357-7037

THIRD-PARTY REQUESTER:

RAYMOND R. MANDRA
FITZPATRICK CELLA HARPER & SCINTO
1290 AVENUE OF THE AMERICAS
NEW YORK, NY 10104-3800