

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* CHI S. WANG,  
APPELLANT

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Appeal 2008-2874  
Application 11/280,384<sup>1</sup>  
Technology Center 1700

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Decided: May 22, 2008

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Before ADRIENE LEPIANE HANLON, CHARLES F. WARREN, and  
MARK NAGUMO, *Administrative Patent Judges*.

Opinion for the Board filed by *Administrative Patent Judge* NAGUMO.

Opinion Dissenting filed by *Administrative Patent Judge* WARREN.

NAGUMO, *Administrative Patent Judge*.

DECISION ON APPEAL

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<sup>1</sup> Application filed 16 November 2005, titled *Plasma-Induced Hydrogen Production from Water*. The real party in interest is listed as Chi S. Wang. (Amended Appeal Brief filed 29 June 2007 ("Br.") at 1.)

Chi S. Wang (“Wang”) appeals from the final rejection of claims 1-6 under 35 U.S.C. § 103(a) in view of the combined teachings of Carlow, Lomax, Jr., Marchand, and Wieland. Claims 7-9 are objected to, and claims 10-12 have been allowed. (Br. 2.) We have jurisdiction under 35 U.S.C. § 6.

For the reasons concisely and well expressed by Wang (Br. 2-7, excluding the paragraph bridging 4-5 and the first two full paragraphs at 5), we REVERSE.

As argued, the claims stand or fall with claim 1, which is drawn to a process for producing hydrogen from vaporized, preheated water and hydrocarbon fuels in a reaction chamber of a plasma reformer in an intense electron field at a temperature between 400° C and 1900° C. (Br., Claims App. at 7.)

Wang demonstrates, based on Carlow, that the non-thermal plasma reactor taught by Carlow is a low-temperature reactor.<sup>2</sup> (Br. 4.) In

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<sup>2</sup> Wang’s arguments based on Harkness and on Grothaus have not been considered because those references were not timely filed during prosecution. The Examiner, properly, does not appear to have considered these references. Wang has not shown “good and sufficient reasons why the . . . other evidence is necessary and was not earlier presented” as required by 37 C.F.R. § 41.33(d)(1); and none of the exceptions enumerated in § 41.33(d)(2) apply. Nor do these references appear to be dictionaries, or treatises that our reviewing court has approved for consultation ‘at any time’:

Although technical treatises and dictionaries fall within the category of extrinsic evidence, as they do not form a part of an integrated patent document, they are worthy of special note. Judges are free to consult such resources at any time in order to better understand the underlying technology and may also rely

particular, Wang points out (*id.*) that Carlow relates to a process that makes use of a non-thermal plasma reactor (Carlow ¶ 1) having catalytic/dielectric coatings on electrodes that generate high electric potentials—e.g., desirably at least 80,000 volts per centimeter (Carlow ¶ 16). Carlow distinguishes its process from three prior art methods of producing hydrogen from hydrocarbons, namely steam reforming (Carlow ¶¶ 4-7) and carbon dioxide reforming (*id.* at ¶¶ 11-13), which are said to be endothermic and to require heat energy, and partial oxidation, which is described as being highly exothermic (*id.* at ¶¶ 8-10). According to Carlow, prior art methods that used plasma to provide assistance to the reactions “provided only a fraction of the energy required to achieve an efficient level of reforming,” and it was “necessary to provide heating to supply at least 80% and more typically 90% or more of the total energy input required.” (Carlow ¶ 14; cited at Br. 4.) Carlow then describes a number of disadvantages of the prior art that are associated with having to accommodate reactors operating at high temperatures. (*Id.*) As the Examiner noted (Ans. 5), Carlow states that “[i]t is an object of the present invention to reduce and, if possible, eliminate the need to supply additional heat energy” (*id.* at ¶ 15).

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on dictionary definitions when construing claim terms, so long as the dictionary definition does not contradict any definition found in or ascertained by a reading of the patent documents.

*Vitronics Corp. v. Conceptronic, Inc.*, 90 F.3d 1576, 1584 n.6 (Fed. Cir. 1996). While we are well aware that “a patent need not teach, and preferably omits, what is well known in the art,” *Hybritech v. Monoclonal Antibodies, Inc.*, 802 F.2d 1367, 1384 (Fed. Cir. 1986), effective argument—especially to a reviewing authority that may well lack familiarity with each of the technical fields that comes before it—may need to include timely filed and probative evidence of what terms of art mean to those skilled in the art.

According to the Examiner, “[i]t is clear from this statement in Carlow et al[.] that heat is supplied to the reactor.” (Ans. 5.) The Examiner draws the conclusion that it would have been reasonable and obvious to combine the plasma-based process taught by Carlow with the steam-reforming process taught by Wieland. (Ans. 5-6.)

The Examiner has not directed our attention to any credible evidentiary basis for the finding that Carlow relates to a reactor to which a significant amount of heat is provided. As pointed out by Wang in its principal brief, the entire tenor of Carlow is exactly the opposite: to Carlow, high temperature reactors present problems that its invention is designed to avoid. Consistently, we note that Carlow instructs that “[g]aseous hydrocarbons that are to undergo reforming reactions can be derived from hydrocarbons that are in the gaseous, liquid or solid state at normal ambient temperatures.” (Carlow ¶ 26.) This is quite a different condition from the preheating of water and hydrocarbon reactants taught by Wieland and required by Wang’s claim 1.

Whereas Wang’s arguments that the Examiner erred in fact finding are well and directly supported by Carlow, the Examiner, in contrast, has failed to establish any credible basis for the technical findings that underpin the legal conclusion of obviousness.

In view of the record and the foregoing considerations, it is

ORDERED that the rejection of claims 1-5 in view of the combined teachings of Carlow, Lomax, Marchand, and Wieland is REVERSED.

REVERSED

WARREN, *Administrative Patent Judge*, Dissenting:

I cannot join in this decision for several reasons. First, the application should have been remanded to the Examiner in the first instance in view of the two articles submitted by Appellant for the first time with the Brief and substantially relied on by Appellant in the arguments submitted in the Brief.

The record shows that no submission date for the articles is asserted in the Evidence Appendix (Br. 9) as required by 37 C.F.R. §§ 41.37(c)(1)(ix), and I find no such documents in the Official electronic records of the USPTO prior to the filing of the Notice of Appeal or of the Brief. In these respects, 37 C.F.R. §§ 41.33(d)(1) and (d)(2) provide in pertinent part: “. . . other evidence filed after the date of filing an appeal . . . and prior to the date of filing a brief . . . may be admitted if the examiner determines that the . . . evidence overcomes all rejections under appeal and that a showing of good and sufficient reasons why the . . . other evidence is necessary and was not earlier presented has been made,” and “[a]ll . . . other evidence filed after the date of filling an appeal . . . will not be admitted . . .” 37 C.F.R. §41.37(c)(2) provides in pertinent part: “A brief shall not include . . . any new or non-admitted . . . other evidence. . . . See . . . § 41.33 for . . . other evidence filed after the date of filing the appeal.”

On this record, the two articles constitute evidence filed after the Notice of Appeal and with the Brief, and are inadmissible on the basis of the above rules. Thus, the Examiner correctly did not enter and consider the same. Manual of Patent Examining Procedure (MPEP) § 1206, II. Affidavits or Other Evidence (8th ed., Rev. 3, August 2005).

Accordingly, Appellant’s reliance on the inadmissible evidence in the articles to any extent in argument presented in the Brief is improper. MPEP

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§ 1205.02 (8th ed., Rev. 3, August 2005) (“Reference to unentered evidence is not permitted in the brief.”). Here, in my opinion, the inadmissible evidence is inextricably intertwined with Appellant’s position (Br. 4-6) such that consideration of Appellant’s arguments to any extent is improper.

Therefore, I am of the view the Brief is non-compliant with the rules to the extent it cannot be considered, and the proper course for this merits panel is to remand the Application to the Examiner to notify Appellant to file an amended Brief pursuant to 37 C.F.R. §41.37(d).

Second, in view of the above, it follows that the majority’s embellishment of Appellant’s position in the Brief by considering the disclosure of Carlow (*see above* pp. 2-4) to a greater extent than reflect by Appellant’s improper arguments in the Brief, and on this basis, finding error in the Examiner’s position for reasons not advanced by Appellant, is likewise improper.

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