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NAVAL RESEARCH LABORATORY ASSOCIATE COUNSEL (PATENTS) CODE 1008.2 4555 OVERLOOK AVENUE, S.W. WASHINGTON, DC 20375-5320			LOPEZ, RICARDO E.	
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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte JEREMY J. PIETRON, MICHAEL B. POMFRET,
CHRISTOPHER N. CHERVIN, DEBRA R. ROLISON,
and JEFFREY W. LONG

Appeal 2019-001288
Application 13/723,878
Technology Center 1700

Before JEFFREY T. SMITH, MICHAEL P. COLAIANNI, and
JANE E. INGLESE, *Administrative Patent Judges*.

COLAIANNI, *Administrative Patent Judge*.

DECISION ON APPEAL

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1–5, 7–11, and 21. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

¹ We use the word “Appellant” to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as The Government of the United State of America, as represented by the Secretary of the Navy. Appeal Br. 2.

Appellant's invention is directed to fuel cell anodes having a RuO₂ coating on a substrate (Spec. ¶ 2; Claim 1).

Claim 1 is representative of the subject matter on appeal:

1. An article comprising:
 - a substrate comprising titanium, a titanium carbide, a titanium nitride, tantalum, aluminum, silicon, or stainless steel; a RuO₂ coating on a portion of the substrate;
 - wherein the coating comprises nanoparticles of RuO₂; and a plurality of platinum nanoparticles on the RuO₂ coating;
 - wherein the RuO₂ coating is made by a method comprising:
 - immersing the substrate in a solution of RuO₄ and a nonpolar solvent at a temperature that is below the temperature at which RuO₄ decomposes to RuO₂ in the nonpolar solvent in the presence of the substrate;
 - and warming the substrate and solution to ambient temperature under ambient conditions to cause the formation of the coating.

Appellant appeals the following rejection:

Claims 1 to 5, 7 to 11, and 21 are rejected under 35 U.S.C. § 103 as unpatentable over Eberhard (US 2006/0198082 A1; pub. Sept. 7, 2006) in view of Nakano (US 2007/0059584 A1; pub. Mar. 15, 2007), and Tsai (US 2008/0251390 A1; pub. Oct. 16, 2008).

FINDINGS OF FACT & ANALYSIS

The Examiner's findings and conclusions regarding the rejection of claim 1 over Eberhard, Nakano, and Tsai are located on pages 3 to 5 of the Non-Final Action. The Examiner finds that Eberhard teaches depositing a ruthenium oxide layer on a titanium casing (Non-Final Act. 3–4). The Examiner finds that Eberhard does not teach that the electrode comprises a

plurality of platinum nanoparticles on the ruthenium oxide (Non-Final Act. 4). The Examiner finds that Nakano teaches a fuel cell electrode comprised of a series of micro-pillars coated with nickel and ruthenium, with platinum electrodeposited on the ruthenium (Non-Final Act. 4). The Examiner finds that neither Eberhard nor Nakano teaches platinum nanoparticles having an average diameter less than about 5 nm (Non-Final Act. 5). The Examiner finds that Tsai teaches a catalyst electrode of a low temperature fuel cell produced by electrodeposition of platinum wherein the platinum comprising catalyst has a particle diameter of about 4.8 nm to 5.22 nm (Non-Final Act. 5). The Examiner concludes that it would have been obvious to include platinum particles on the ruthenium oxide layer in Eberhard's capacitor as taught by Nakano to improve the capacity density of the electrode (Non-Final Act. 5). The Examiner further concludes that it would have been obvious to select electrodeposition as taught by Tsai for the platinum coating having platinum nanoparticles with a diameter of about 5 nm for the electrode to provide the electrode catalyst with the maximum specific surface area of platinum (Non-Final Act. 5).

Appellant argues that the combined teachings of Eberhard, Nakano, and Tsai fail to teach or suggest depositing platinum particles on a ruthenium oxide layer (Appeal Br. 5–6). The Examiner responds that the combined teachings of Nakano and Eberhard would have suggested deposition of Nakano's platinum particles over Eberhard's ruthenia (Ans. 9). The Examiner finds that one of ordinary skill in the art would immediately understand the same benefit (i.e., improved electrode capacity and low resistance) would be present if ruthenium were present as such or as ruthenia (Ans. 9). Appellant counters that the Examiner provides no evidence to

support the assumption that ruthenium metal would behave the same as the oxide of the metal (Reply Br. 2).

The preponderance of the evidence favors Appellant's argument of nonobviousness. The Examiner has the initial burden of establishing a prima facie case of obviousness. In this case, the Examiner has not established that Nakano and Eberhard would have suggested applying platinum nanoparticles to a ruthenium oxide coating. Rather, Nakano teaches applying platinum to a ruthenium metal coating, not the oxide. The Examiner has not established that "one of ordinary skill in the art would immediately understand the same benefit would be present if ruthenium is present as such or as ruthenia" (Ans. 9). In light of Appellant's challenge to the Examiner's findings, the burden rests with the Examiner to support a prima facie case.

On this record, we reverse the Examiner's § 103 rejection of claims 1 to 5, 7 to 11, and 21 over Eberhard in view of Nakano and Tsai.

CONCLUSION

In summary:

Claims Rejected	Basis	Affirmed	Reversed
1 to 5, 7 to 11, and 21	§ 103 Eberhard, Nakano, and Tsai		1 to 5, 7 to 11, and 21

REVERSED