

THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 13

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MILIVOJ K. BRUN, KRISHAN L. LUTHRA and RAJ N. SINGH

Appeal No. 1996-2829
Application No. 08/403,356¹

ON BRIEF

Before WINTERS, METZ and PAK, **Administrative Patent Judges**.

PAK, **Administrative Patent Judge**.

DECISION ON APPEAL

This is an appeal from the examiner's final rejection of claims 10 through 12, which are all of the claims pending in the application. This appeal is related to Appeal No. 95-

¹ Application for patent filed March 14, 1995. According to the appellants, this application is a continuation of Application No. 08/218,170, filed March 28, 1994, which is a division of Application No. 08/057,919, filed May 7, 1993, which is a continuation of Application No. 07/716,444, filed June 17, 1991, all of which are now abandoned.

4981, an appeal from the final rejection of claims 10 through 16 in Application 08/248,583, which is directed to a method for forming a fiber reinforced silicon carbide matrix.

Claim 10, the broadest claim in this application, reads as follows:

10. A fiber reinforced silicon carbide matrix composite comprising at least about 10 volume percent of metal nitride coated fiber and from about 5 to 90 volume percent silicon carbide, said metal nitride coated fiber consisting essentially of a silicon carbide fiber, and a metal nitride coating selected from the group consisting of silicon nitride, titanium nitride, tantalum nitride, zirconium nitride, hafnium nitride, aluminum nitride, niobium nitride, and mixtures thereof, where said metal nitride first coating is a continuous coating covering the entire surface of said silicon carbide fiber.

As evidence of obviousness, the examiner relies on the following prior art:

Singh et al. (Singh)	4,889,686	Dec. 26, 1989
Borom et al. (Borom)	5,015,540	May 14, 1991
		(filed Jun. 1, 1987)
Rousseau	5,051,300	Sep. 24, 1991
		(filed Aug. 15, 1989)

Claims 10 through 12 stand rejected under 35 U.S.C. § 103 as unpatentable over the combined disclosures of either Borom or Singh, and Rousseau.

We reverse.

The examiner states (Answer, pages 3 and 4) that:

Borom forms a composite of fibrous silicon carbide coated with boron nitride, in a matrix of silicon carbide. See lines 39-55 of col. 1.

Singh discloses a process which comprises applying a continuous coating of boron nitride (col. 3, lines 48-50) to a fibrous material which may be SiC (col. 3, line 5). The diameter of the coated fibers are from 50 microns to 250 microns (col. 8, line 29).

Singh's coated fibers are infiltrated with a molten mixture of boron and silicon. One such composite formed comprised about 65% by volume of silicon carbide and about 10% by volume of coated fibers (col. 18, lines 52-60).

Both Borom and Singh differ from the instantly claimed invention only in that they use boron nitride as the coating material instead of silicon nitride, aluminum nitride, titanium nitride, zirconium nitride, hafnium nitride, niobium nitride, or tantalum nitride or mixtures thereof.

To remedy this deficiency of Borom and Singh, the examiner relies on Rousseau to demonstrate that it would have been obvious to one of ordinary skill in the art to substitute a nitride of aluminum, hafnium or zirconium for boron nitride on the fibers of the fiber reinforced silicon carbide matrix composite described in Borom or Singh. See the Answer, page 4.

Appellants do not dispute the examiner's findings regarding the contents of Borom and Singh. See the amended Brief in its entirety. Appellants, however, dispute that

Rousseau provides a suggestion to deposit the nitride of aluminum, hafnium or

zirconium, in lieu of boron nitride, on the fibers of the fiber reinforced composite described in Borom or Singh. See the amended Brief, pages 8-12.

The dispositive question is, therefore, whether it would have been obvious to deposit the nitride of aluminum, zirconium, or hafnium, in lieu of boron nitride, on the fibers of the fiber reinforced composite described in Borom or Singh. We answer this question in the negative.

We observe that both Borom and Singh employ a boron nitride coating on the fibers to prevent or substantially prevent reaction between the fibrous material and the infiltrating silicon. See Borom, column 3, lines 58-66 and Singh, column 4, lines 3-17. Rousseau, however, does not teach that the nitride of aluminum, zirconium or hafnium is equivalent to boron nitride for the purpose of preventing reaction between the fibrous material and the infiltrating silicon. See column 3, lines 5-15. In fact, we observe that Rousseau teaches away from using the nitrides involved in an environment where molten silicon (infiltrating silicon) is involved. See column 3, line 20. Absent the appellants' own teachings, we can think of no cogent reason why one of ordinary skill in this art would have been motivated to employ

the nitride of aluminum, zirconium or hafnium, in lieu of boron nitride, on the fibers of the fiber reinforced composite described in Borom or Singh. As the court in *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir. 1988) stated, "it is impermissible to use the claims as a frame and the prior art references as a mosaic to piece together a facsimile of the claimed invention."

In view of the foregoing, we reverse the examiner's decision rejecting claims 10 through 12 under 35 U.S.C. § 103.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

REVERSED

SHERMAN D. WINTERS)	
Administrative Patent Judge)	
)	
)	
)	
)	BOARD OF PATENT
ANDREW H. METZ)	APPEALS
Administrative Patent Judge)	AND
)	INTERFERENCES
)	
)	
)	
CHUNG K. PAK)	
Administrative Patent Judge)	

jrg

General Electric Company
CRD Patent Docket Rm. 4A59
P.O. Box 8 Building K1 Salamone
Schenectady, NY 12301