

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TAIWAN SEMICONDUCTOR MANUFACTURING COMPANY LTD,
TSMC NORTH AMERICA CORP.,
FUJITSU SEMICONDUCTOR LIMITED AND
FUJITSU SEMICONDUCTOR AMERICA, INC.

Petitioner

v.

ZOND, LLC
Patent Owner

Case IPR2014-01481
Patent 6,896,773

ZOND LLC'S PATENT OWNER PRELIMINARY RESPONSE
PURSUANT TO 37 C.F.R. § 42.107(a)

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1. The cited references do not teach “an amplitude and a rise time of the voltage pulse being chosen so that ions in the strongly ionized plasma generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target,” as recited in independent claim 21 and as similarly recited in independent claim 40.45

2. The cited references do not teach the “means for increasing the density of the weakly-ionized plasma to generate a strongly-ionized plasma having a density of ions that generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target,” as recited in independent claim 40.49

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I. INTRODUCTION

The Board should deny the present request for *inter partes* review of U.S. Patent No. 6,896,773 (“the ’773 patent”) because there is not a reasonable likelihood that the Petitioner will prevail at trial with respect to at least one claim of the ’773 patent.¹

Indeed, there are six different and independent groups of reasons why the Petitioner cannot prevail. First, the references that are primarily relied upon by the Petitioner (*i.e.*, Mozgrin and Wang) were already considered by the Examiner and overcome during the prosecution of the application that led to the issuance of the ’773 patent. These references were considered by 6 different examiners and overcome during the prosecution of 9 other patents that are related to the ’773 patent over nearly a 10 year period.² Fortov,

¹ 35 U.S.C. § 314(a).

² Examiners Douglas Owens, Tung X. Le, Rodney McDonald, Wilson Lee, Don Wong, and Tuyet T. Vo allowed U.S. Patents 7,147,759, 7,808,184, 7,811,421, 8,125,155, 6,853,142, 7,604,716, 6,896,775, 6,896,773, 6,805,779, and 6,806,652 over Mozgrin and Wang over nearly a decade from the time that the application for the ’759 patent was filed on 9/30/2002 to the time that the ’155 patent issued on 2/28/2012.

another reference heavily relied upon by Petitioner in this IPR, was also considered during the prosecution of the application that led to the '773 Patent; it was cited during prosecution as the Encyclopedia Of Low Temperature Plasma.³

Second, the Petitioner's obviousness rejections are all predicated on the false assumption that a skilled artisan could have achieved the combination of i) a cathode assembly including a sputtering target; ii) ionizing a feed gas to generate a weakly-ionized plasma proximate to the cathode assembly; and iii) applying a voltage pulse to the cathode assembly to generate a strongly-ionized plasma from the weakly ionized plasma, an amplitude and a rise time of the voltage pulse being chosen so that ions in the strongly ionized plasma generate sufficient thermal energy in the sputtering target to cause a sputtering yield to be non-linearly related to a temperature of the sputtering target, thereby increasing a deposition rate of the sputtering (*i.e.*, claims 21 and 40) by combining the teachings of either Mozgrin or Wang with Fortov, Lantsman, and/or Kudryavtsev.⁴

³ Exhibit 1101, '773 Patent, p. 2.

⁴ Petition at pp. 13-60.

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