

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

The Gillette Company

Petitioner

v.

ZOND, LLC
Patent Owner

U.S. Patent No. 6,896,775

Inter Partes Review Case No. 2014-00578

**PATENT OWNER'S PRELIMINARY RESPONSE
UNDER 37 CFR § 42.107(a)**

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I. Introduction

The present petition for *inter partes* review of U.S. Patent No. 6,896,775 (“the ‘775 patent”) is first of two petitions filed by the Gillette Company challenging the ‘775 patent. This petition challenges two of the patent’s independent claims (1, 15) and all claims that depend from claims 1, 15.

The independent claims 1, 15 are directed to a method and apparatus for etching material from a substrate using a strongly-ionized plasma formed by a particular type of multi-stage ionization process in which neutral atoms in a weakly ionized gas are first excited from the ground state, and in which secondary electrons are formed from a cathode. The secondary electrons interact with the excited atoms to thereby ionize them to form a strongly ionized plasma. This is in contrast to a more conventional ionization process in which atoms are ionized directly from the ground state, without first achieving an excited state.

The Petition challenges claims 1 and 15 based on two prior art references, Mozgrin¹ and Wang,² combined with a prior art patent by

¹ Ex. 1002, Mozgrin.

² Ex. 1008, Wang patent No. 6,413,382 (“Wang”).

Kudryavtsev.³ Neither Mozgrin nor Wang discuss or even hint of the type of ionization process of the claims. So the Petition cites to Kudryavtsev as alleged proof that Mozgrin and Wang inherently implement the claimed type of multi-stage ionization. But the Petition falls far short of proving such inherency. As we will explain below, Kudryavtsev predicts that a tubular electrode structure may or may not yield multi-stage ionization depending on a variety of conditions, namely, the gas pressure p , the radius R of the tubular electrode structure, the strength of the applied electric field E , and the density of ground state argon atoms, n_1 . Therefore Kudryavtsev does not prove that Mozgrin's or Wang's radically different electrode structures and operating conditions would inherently provide the claimed multi-stage ionization.

For example, both Mozgrin and Wang use electrodes that are spaced closely spacer to each other than Kudryavtsev's electrodes, and which were immersed in a magnetic field that can dramatically influence ion formation and ion density. Yet Kudryavtsev does not consider such a magnetic field in his mathematical model or in his experimental set up. Therefore, there is no indication in Kudryavtsev of how the presence of the magnetic field in Mozgrin and Wang would influence the type of ionization. Accordingly, the

³ Ex. 1003, Kudryavtsev.

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