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Paper 9
Entered: June 13, 2017

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

INTEL CORPORATION, GLOBALFOUNDRIES U.S., INC.,
and MICRON TECHNOLOGY, INC.,
Petitioner,

v.

DANIEL L. FLAMM,
Patent Owner.

Case IPR2017-00279
Patent RE 40,264 E

Before CHRISTOPHER L. CRUMBLEY, JO-ANNE M. KOKOSKI, and KIMBERLY McGRAW, *Administrative Patent Judges*.

CRUMBLEY, *Administrative Patent Judge*.

DECISION
Institution of *Inter Partes* Review
35 U.S.C. § 314(a) and 37 C.F.R. § 42.108

I. INTRODUCTION

Intel Corporation, GLOBALFOUNDRIES U.S., Inc., and Micron Technology, Inc. (collectively, "Intel") filed a Petition requesting an *inter partes* review of claims 13–26, 64, and 65 of U.S. Patent No. RE 40,264 E (Ex. 1001, "the '264 patent"). Paper 2 ("Pet."). Daniel L. Flamm, the named inventor on the '264 patent and the Patent Owner, filed a Preliminary Response to the Petition. Paper 8 ("Prelim. Resp.").

Pursuant to 35 U.S.C. § 314(a), an *inter partes* review may not be instituted unless the information presented in the Petition shows "there is a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." Taking into account the arguments presented in Flamm's Preliminary Response, we conclude that the information presented in the Petition establishes that there is a reasonable likelihood that Intel will prevail in challenging claims 13–26, 64, and 65 of the '264 patent as unpatentable. Accordingly, we institute trial on those claims.

A. Related Matters

The '264 patent is the subject of thirteen prior or pending *inter partes* review proceedings: seven filed by Lam Research Corporation (IPR2015-01759; IPR2015-01764; IPR2015-01766; IPR2015-01768; IPR2016-00468; IPR2016-00469; and IPR2016-00470), each of which was denied institution or terminated pursuant to settlement; two filed by Samsung Electronics Co., Ltd. (IPR2016-01510 and IPR2016-01512), of which the latter is currently pending; and three filed by Intel concurrently with the instant Petition (IPR2017-00280, IPR2017-00281, and IPR2017-00282). Although Flamm

notes the prior challenges to the claims of the '264 patent (Prelim. Resp. 1–2), he does not argue that we should exercise our discretion to deny institution of the instant Petition on the basis that the same or substantially the same art or arguments previously were presented to the Office. *See* 35 U.S.C. § 325(d).

Intel reports that Flamm has asserted the '264 patent against it and other defendants in five proceedings in the Northern District of California: Case Nos. 5:16-cv-01578-BLF, 5:16-cv-1579-BLF, 5:16-cv-1580-BLF, 5:16-cv-1581-BLF, and 5:16-cv-02252-BLF. Pet. 2.

B. The '264 Patent

The '264 patent, titled "Multi-Temperature Processing," reissued April 29, 2008, from U.S. Patent Application No. 10/439,245, filed on May 14, 2003. Ex. 1001, (54), (45), (21), (22). The '264 patent is a reissue of U.S. Patent No. 6,231,776, which issued May 15, 2001 from U.S. Patent Application 09/151,163, filed September 10, 1998. *Id*. at (64). The patent is directed to a method "for etching a substrate in the manufacture of a device," where the method "provide[s] different processing temperatures during an etching process or the like." Ex. 1001, Abstract. The apparatus used in the method is shown in Figure 1 below.

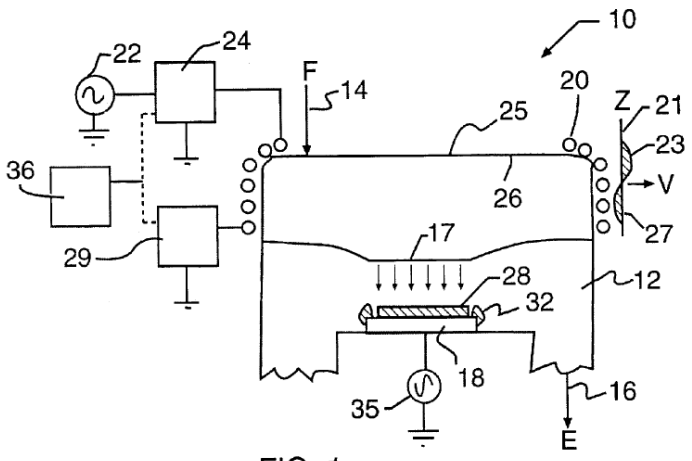

FIG. 1

Figure 1 depicts a substrate (product 28, such as a wafer to be etched) on a substrate holder (product support chuck or pedestal 18) in a chamber (chamber 12 of plasma etch apparatus 10). *Id.* at 3:24–25, 3:32–33, 3:40–41.

Figures 6 and 7, below, depict a temperature-controlled substrate holder and temperature control systems.

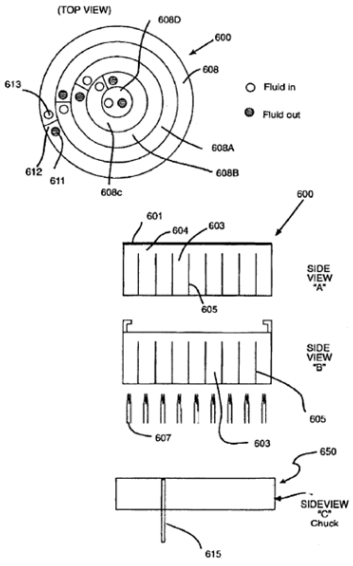

FIG. 6

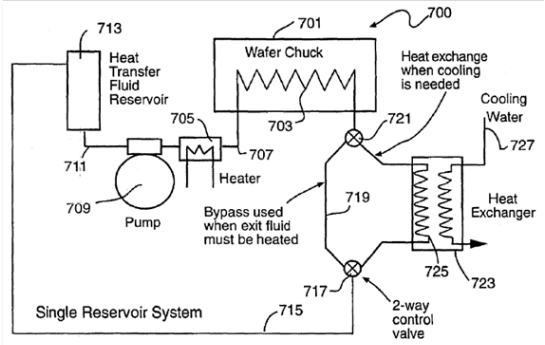

Fig. 7

Figures 6 and 7 depict temperature-controlled fluid flowing through substrate holder (600, 701), guided by baffles 605, where "[t]he fluid [is]

used to heat or cool the upper surface of the substrate holder." *Id.* at 14:28–63, 16:5–67. Figure 6 also depicts heating elements 607 underneath the substrate holder, where "[t]he heating elements can selectively heat one or more zones in a desirable manner." *Id.* at 15:10–26. Referring to Figure 7, the operation of the temperature control system is described as follows:

> The desired fluid temperature is determined by comparing the desired wafer or wafer chuck set point temperature to a measured wafer or wafer chuck temperature . . . . The heat exchanger, fluid flow rate, coolant–side fluid temperature, heater power, chuck, etc. should be designed using conventional means to permit the heater to bring the fluid to a setpoint temperature and bring the temperature of the chuck and wafer to predetermined temperatures within specified time intervals and within specified uniformity limits.

Id. at 16:36–39, 50–67.

An example of a semiconductor substrate to be patterned is shown in Figure 9, below.

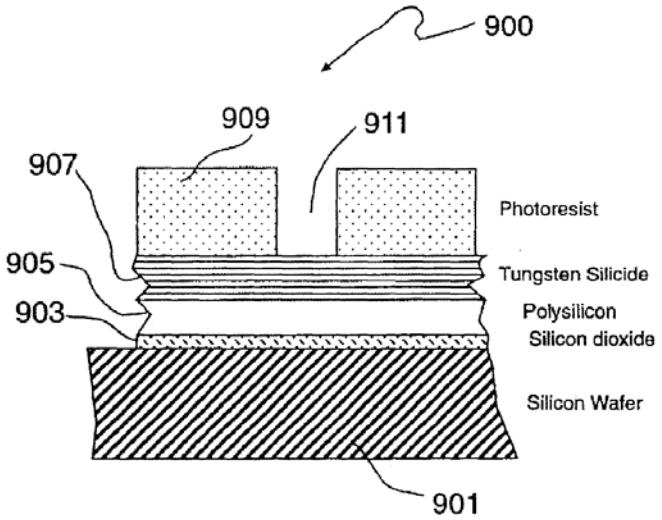

Figure 9 depicts substrate 901 having a stack of layers including oxide layer 903, polysilicon layer 905, tungsten silicide layer 907, and photoresist

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