

**IN THE UNITED STATES DISTRICT COURT
FOR THE CENTRAL DISTRICT OF ILLINOIS
URBANA DIVISION**

**THE BOARD OF TRUSTEES OF THE
UNIVERSITY OF ILLINOIS,**

Plaintiff,

v.

MICRON TECHNOLOGY, INC.,

Defendant.

**Civil No. 2:11-cv-02288-SLD-JAG
Jury Trial Demanded**

AMENDED COMPLAINT

Parties

1. Plaintiff, The Board of Trustees of the University of Illinois ("the University") is a body corporate and politic pursuant to the University of Illinois Act, 110 ILCS § 305, *et seq.*, with a principal place of business at 352 Henry Administration Building, MC-350, 506 South Wright Street, Urbana, Illinois 61801.

2. Defendant, Micron Technology, Inc. ("Micron") a Delaware corporation with a principal place of business at 8000 S. Federal Way, Boise, Idaho 83716.

The University Patents

3. The patents asserted in this action are U.S. Patent Nos. 5,872,387 ("the '387 patent") (Ex. A), 6,444,533 ("the '533 patent") (Ex. B), and 6,888,204 ("the '204 patent") (Ex. C) (collectively the "University Patents"). The University Patents pertain generally to the use of deuterium in the fabrication of semiconductor devices.

4. The University is the owner by assignment of the University Patents.

5. The named inventors on the University Patents are Drs. Joseph W. Lyding and Karl Hess.
6. Dr. Lyding is a professor in the University's Department of Electrical and Computer Engineering and a full-time faculty member in the Nanoelectronics and Biophotonics group.
7. Dr. Lyding is also a Fellow of the American Vacuum Society and APS, a Senior Member of IEEE, and recipient of the DARPA Award for Sustained Excellence.
8. Dr. Hess, now retired from the University, is also a distinguished scientist and has been recognized for his numerous achievements, including the Heinrich Welker Award, and the J.J. Ebers Award (IEEE).
9. Dr. Hess has also been elected to both the prestigious National Academy of Sciences and National Academy of Engineering.

The University's Past Relations with Micron

10. In February 2004, Dr. Lyding visited Micron at Micron's invitation to give presentations on the technology covered by the University Patents.
11. On May 5, 2004, the University and Micron executed a Work Agreement ("the Agreement") wherein Micron was permitted, "for evaluation purposes only," to "test, inspect, use, disassemble, and analyze" wafers treated by the University's proprietary Deuterium Anneal Process, Ex. D.
11. Pursuant to the Agreement, in the event that Micron wished to commercialize the technology embodied in the wafers treated by the University, Micron was to seek a license to the intellectual property.
12. Micron never sought a license from the University.

The Accused Products

13. Upon information and belief, in or around 2006, Micron commenced selling and manufacturing semiconductor devices, including the 2GB 3.3V 48-TSOP NAND Flash device, that incorporate deuterium with a designed process step, e.g., passivated in the presence of a deuterium-enriched ambient ("the Accused Products").
14. The Accused Products contain an n-channel field effect transistor having an interface between a silicon layer, or semiconductor region, and a gate oxide, or insulating, layer.
15. The semiconductor region of the Accused Products has a source and a drain formed therein, and a channel between the two.
16. The Accused Products have a contact on said insulating layer for the drain.
17. The insulating layer in the Accused Products contains silicon dioxide, another oxide of silicon, or silicon oxy-nitride.
18. The insulating layer in the Accused Products has a thickness not exceeding about 55 Å beneath the contact.
19. Upon information and belief, Micron, in the manufacture of the Accused Products, performs a post-fabrication passivation or annealing of the interface in the presence of an ambient heated to above about 200° C, said ambient comprising deuterium gas and one or more of hydrogen, nitrogen, argon, and helium gas inert gases, and wherein the ambient includes between 1% an 99% by volume deuterium gas.
20. Upon information and belief, Micron's post-fabrication passivation results in the covalent bonding of deuterium atoms, and increases the resilience of the field effect transistor to hot electron effects or hot carrier stress.

21. The Accused Products are encapsulated.

Jurisdiction and Venue

22. This Court has subject matter jurisdiction pursuant to 28 U.S.C. § 1338.

23. Venue is proper in this Judicial District pursuant to 28 U.S.C. §§ 1391 and 1400.

Count I – Infringement of the '204 Patent

24. The University of Illinois repeats paragraphs 1-23, *supra*.

25. Micron's manufacture, use and sale of the Accused Products constitute an infringement of at least claims 1-9, & 15-18 of the '204 patent.

26. Micron's infringement of the '204 patent has been willful.

27. Micron's infringement of the '204 patent has caused irreparable injury to the University.

Count II – Infringement of the '533 Patent

28. The University of Illinois repeats paragraphs 1-27, *supra*.

29. Micron's manufacture, use and sale of the Accused Products constitute an infringement of at least claims 1 & 4-6 of the '533 patent.

30. Micron's infringement of the '533 patent has been willful.

31. Micron's infringement of the '533 patent has caused irreparable injury to the University.

Count III – Infringement of the '387 Patent

32. The University of Illinois repeats paragraphs 1-31, *supra*.

33. Micron's manufacture, use and sale of the Accused Products constitute an infringement of at least claim 1 of the '387 patent.

34. Micron's infringement of the '387 patent has been willful.

35. Micron's infringement of the '387 patent has caused irreparable injury to the University.

Count IV – Breach of Contract

36. The University of Illinois repeats paragraphs 1-35, *supra*.
37. The Agreement constitutes a valid contract between the University and Micron.
38. Micron's commercialization of the technology covered by the Agreement constitutes a breach of the Agreement.
39. Micron's breach of the Agreement has caused injury to the University.

WHEREFORE, the University respectfully requests that this Court:

- a) ENTER judgment against Micron on each claim contained herein;
- b) ORDER an accounting for damages, including interest thereon, due and owing by Micron to the University;
- c) FIND that Micron's infringement of the University's Patents is, and has been, willful, and ORDER that damages resulting from such infringement be enhanced; and
- d) AWARD the University its reasonable costs and attorney fees; and

Dated: May 7, 2012

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Respectfully submitted,

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JURY DEMAND

The Board of Trustees of the University of Illinois demands a trial by jury on all issues triable by jury.

s/ Joseph A. Grear
Joseph A. Grear