



US006514866B2

(12) **United States Patent**
Russell et al.

(10) **Patent No.:** **US 6,514,866 B2**
(45) **Date of Patent:** **Feb. 4, 2003**

(54) **CHEMICALLY ENHANCED FOCUSED ION BEAM MICRO-MACHINING OF COPPER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/871,541**

(22) Filed: **May 31, 2001**

(65) **Prior Publication Data**

US 2002/0094694 A1 Jul. 18, 2002

Related U.S. Application Data

(60) Provisional application No. 60/261,109, filed on Jan. 12, 2001.

(51) **Int. Cl.⁷** **H01L 21/302**

(52) **U.S. Cl.** **438/712; 438/738**

(58) **Field of Search** **438/712, 714, 438/720, 723, 738; 216/66, 72, 78**

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(57) **ABSTRACT**

A method of micromachining a copper layer on a substrate is carried out by maintaining the substrate in a vacuum, bombarding a portion of the substrate with a focused particle beam from a particle source, and exposing the substrate to a supply of organic chloride or hydroxide during particle bombardment. The organic chloride or hydroxide concentration at the substrate is an amount sufficient to enhance the relative removal of the copper layer by decreasing the removal of the dielectric or increasing the removal of the copper or a combination of both.

22 Claims, 4 Drawing Sheets

