



INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B24B 37/04, 53/007, B24D 7/06	A1	(11) International Publication Number: WO 99/03639 (43) International Publication Date: 28 January 1999 (28.01.99)
(21) International Application Number: PCT/US97/12385 (22) International Filing Date: 16 July 1997 (16.07.97) (71) Applicant: SPEEDFAM CORPORATION [US/US]; 305 N. 54th Street, Chandler, AZ 85226 (US). (72) Inventors: HOLZAPFEL, Paul; 4592 W. Dublin Street, Chandler, AZ 85226 (US). CROSBY, Thomas, K.; 300 W. Juniper Avenue, Gilbert, AZ 85233 (US). KRUSE, Richard, J.; 300 W. Juniper Avenue, Gilbert, AZ 85233 (US). BIDLINGMEIER, Larry; 12618 S. Nambe Street, Phoenix, AZ 85004 (US). SCHLUETER, James; 15037 S. 25th Place, Phoenix, AZ 85048 (US). (74) Agents: HILYARD, Chad, S. et al.; Snell & Wilmer, One Arizona Center, 400 E. Van Turen Street, Phoenix, AZ 85004-0001 (US).	(81) Designated States: DE, GB, JP, KR, SG, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>	

(54) Title: **METHODS AND APPARATUS FOR CONDITIONING POLISHING PADS UTILIZING BRAZED DIAMOND TECHNOLOGY**

(57) Abstract

A conditioning ring (200) having cutting elements (205) brazed-bonded to the bottom surface (204) of the ring and suitably adopted for conditioning a workpiece polishing pad (126) by contact with the pad. The conditioning ring (200) further includes a flange (202) extending about the bottom periphery of the ring (200) with the cutting elements (205) being attached to the bottom surface of the flange (202). The flange (202) includes cutout portions for permitting material to escape from the interior of the ring. The cutting elements (205) are distributed substantially uniformly across the bottom surface of the flange (202) and the elements are brazed-bonded to the flange (202) with a braised

metal alloy, creating an extremely strong bond between the cutting elements (205) and the flange surface. Further, the conditioning ring (200) may be attached to a plurality wafer carrier elements (124) so that the conditioning process occurs during the actual polishing of the wafers (10), or the conditioning ring (200) may be attached to a mechanical arm which engages the ring against the polishing pad (126) in between wafer polishing steps. In either case, to enhance the conditioning process, the carrier element (124) and the mechanical arm rotate the ring (200) about its axis and oscillates the ring back and forth the polishing pad (126).

