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- (71) **Applicant: ACM RESEARCH (SHANGHAI) INC.**
[CN/CN]; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN).
- (72) **Inventors: WANG, Hui;** Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN).
CHEN, Fufa; Bld. 4, No. 1690 Cailun Road, Zhangjiang

High-tech Park, Shanghai 201203 (CN). **CHEN, Fuping**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **WANG, Jian**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **WANG, Xi**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **ZHANG, Xiaoyan**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **JIN, Yinuo**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **JIA, Zhaowei**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **XIE, Liangzhi**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **WANG, Jun**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN). **LI, Xuejun**; Bld. 4, No. 1690 Cailun Road, Zhangjiang High-tech Park, Shanghai 201203 (CN).

- (54) Title: SYSTEM FOR CLEANING SEMICONDUCTOR WAFERS

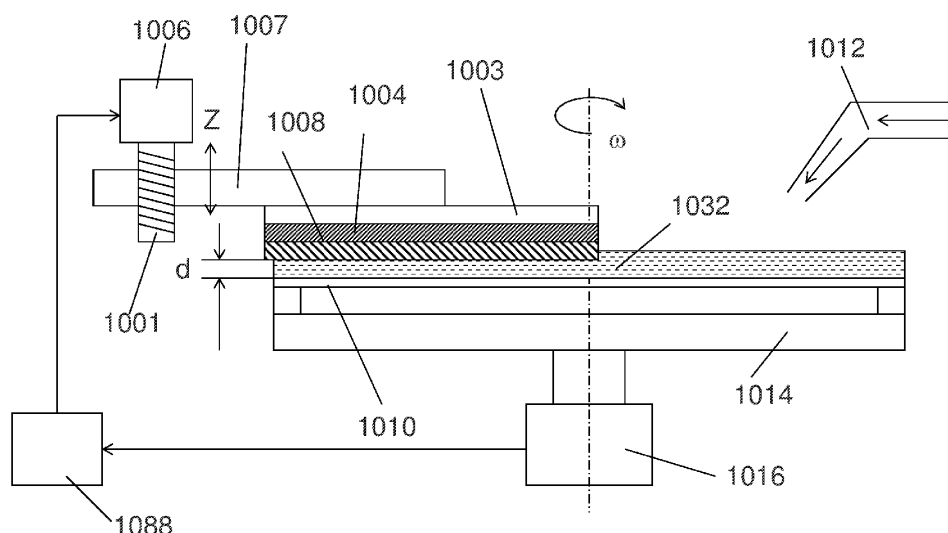


Fig. 1A

- (57) **Abstract:** A system for controlling damages in cleaning a semiconductor wafer (1010) comprising features of patterned structures, comprising: a wafer chuck (1014) for temporary restraining a semiconductor wafer (1010) during a cleaning process; a nozzle (1012) for delivering a cleaning liquid over a surface of the semiconductor wafer (1010); a sonic generator (25082) configured to alternately operate at a first frequency (f_1) and a first power level (P_1) for a first predetermined period of time (τ_1) and at a second frequency (f_2) and a second power level (P_2) for a second predetermined period of time (τ_2), to impart sonic energy to the cleaning liquid, wherein the first predetermined period of time (τ_1) and the second predetermined period of time (τ_2) consecutively follows one another; and a controller programmed to provide the cleaning parameters, wherein at least one of

(74) **Agent: SHANGHAI PATENT & TRADEMARK LAW OFFICE, LLC**; 435 Guiping Road, Shanghai 200233 (CN).

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the cleaning parameters is determined such that a percentage of damaged features as a result of the imparting sonic energy is lower than a predetermined threshold.