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(71) Applicant *(for all designated States except US)*: **ADVANCED TECHNOLOGY MATERIALS, INC.** [US/US]; 7 Commerce Drive, Danbury, Connecticut 06810 (US).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **BOGGS, Karl** [US/US]; 74 Carol Drive, Hopewell Junction, New York 12533 (US). **DARSILLO, Michael** [US/US]; 63 Quail Run Road, Woodbury, Connecticut 06798 (US). **WRSCHKA, Peter** [US/US]; 1 Beach Drive, Danbury, Connecticut 06811 (US). **WELCH, James** [US/US]; 45 Sandy Lane, Wolcott, Connecticut 06716 (US).

(74) Agents: **FUIERER, Tristan A.** et al.; MOORE & VAN ALLEN PLLC, Post Office Box 13706, Research Triangle Park, North Carolina 27709 (US).

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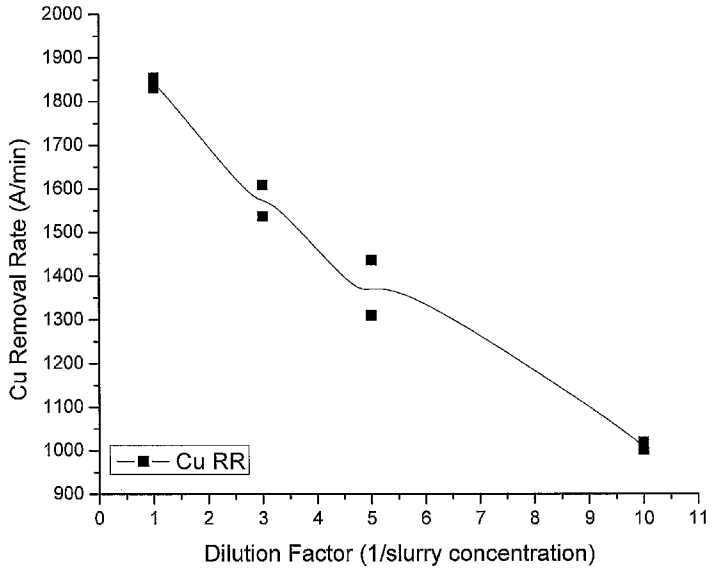
(54) Title: HIGH THROUGHPUT CHEMICAL MECHANICAL POLISHING COMPOSITION FOR METAL FILM PLANARIZATION



(57) Abstract: A chemical mechanical polishing process including a single Step I CMP slurry formulation for planarization of a microelectronic device structure preferably having copper deposited thereon. The process includes the bulk removal of a copper layer using a first CMP slurry formulation having oxidizing agent, passivating agent, abrasive and solvent, and the soft polishing and over-polishing of the microelectronic device structure using a formulation including the first CMP slurry formulation and at least one additional additive. The CMP process described herein provides a high copper removal rate, a comparatively low barrier material removal rate, appropriate material selectivity ranges to minimize copper dishing at the onset of barrier material exposure, and good planarization efficiency.

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