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Electromigration characterization of semiconductor devices NARAHARA DINGARI, BRIAN SETLIK, DAVID HESKETT — Insuring the reliability of metal interconnects has become one of the most serious issues in the design and fabrication of integrated circuits. Electromigration is an important failure mechanism which affects the functionality and lifetime of integrated circuits. The addition of relatively small amounts of copper has repeatedly been shown to improve device lifetimes. Through the use of Scanning Electron Microscope (SEM) with Energy Dispersive Spectroscopic (EDS) capabilities we have measured the copper concentration as a function of length for interconnects after several accelerated stress time periods. We observe a migration of copper atoms from the cathode to the anode side of the interconnect as a function of stressing time. A pileup of copper near the middle of the interconnect indicates a blocking of copper diffusion and creates a site for interconnect failure.

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