

BEOL Process Challenges

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- Extending the Cu/low-k integration
- Cu volume and grain size
- Physical limitation to RC performance
- Electromigration and TDDDB reliability

Takeshi Nogami is a Research Staff member of IBM Research in Albany Nano Tech Center. He received BE, ME, and Ph.D. in chemical engineering from University of Tokyo, Tokyo Japan. He worked for Toshiba Corp., Kawasaki Steel Corp., Advanced Micro Devices Inc., and Sony Corp. prior to joining IBM in 2006. He has been working on copper interconnect technology. His recent work includes the CuMn alloy seed Low-k/Cu integration, CVD-Co liner application to fine dimension BEOL, and various diffusion barrier assessment for 10 nm and beyond. His most recent work which is presented in this IEDM 2015 is a break-through technology to achieve low line/via resistance and high EM reliability simultaneously in 10 nm node and beyond by introduction of a new barrier/liner/seed integration scheme named as through-cobalt self-forming barrier (tCoSFB). He is a holder of 124 U.S. patents.