



Call for Papers
IEEE TRANSACTIONS ON
AUTOMATION SCIENCE AND ENGINEERING
Special Issue on
eManufacturing in the Semiconductor Industry

IEEE

Semiconductor manufacturing is a rapidly growing cornerstone industry. But it is also a very harsh environment due to complicated production processes, sophisticated equipment, and fluctuating demand. With the emerging highly automated wafer fabrication facilities (fabs), there is a compelling trend to promote eManufacturing which is the interdisciplinary R&D field integrating automation with advanced decision technologies (such as Operations Research, Artificial Intelligence and Queuing Theory). Automation systems with standard protocols generate a wealth of data with high quantity, quality and frequency. Decision technologies are then applied to analyze data and to create intelligent algorithms. Finally the algorithms are enabled through the automation systems to control work flow, material flow, and information flow of global supply chain networks. By seamless integration of automation and decision technologies, eManufacturing will completely change the way we manage our factories, logistics, outsourcing, and supply chain networks – which may lead to halved cycle time, vastly improved process control, and unprecedented fab productivity. The central theme of the Special Issue is on *recent progress in semiconductor eManufacturing*. We welcome original, significant and visionary papers describing scientific methods and technologies that improve efficiency and productivity of semiconductor manufacturing. The content could also present academic surveys and reviews that summarize state-of-the-art theories and practices in this arena. Special attention will be paid to papers focusing on integrating automation with decision technologies to provide eManufacturing solutions. Submissions of scientific results from experts in academia and industry worldwide are strongly encouraged. Topics to be covered include, but are not limited to:

- Factory modeling, analysis, performance evaluation
- Planning, scheduling, coordination
- Wafer release policies
- Wafer dispatching techniques
- Equipment productivity improvement
- Automated material handling systems (AMHS)
- Factory/cell/equipment-level controller design
- Manufacturing execution systems (MES)
- Advanced process control (APC)
- Equipment engineering systems (EES)
- Cycle time reduction
- Decision support systems (DSS)
- Yield enhancement systems & e-Diagnosis
- Data mining for yield and production improvement
- Fully automated factory & Remote Operation Center
- Mobile and wireless applications (RFID)
- Agent based intelligent systems
- Engineering chains & Supply chains
- Factory of the future
- Benchmark and case studies

Important Dates

- July 1, 2006: Paper submission deadline.
- November 1, 2006: Completion of the first round paper review.
- March 1, 2007: Completion of the second round paper review.
- April 1, 2007: Final manuscripts due.
- July 1 2007: Tentative publication date.

Guest Editors

Mike Tao Zhang
Intel Corporation
Email: mike.zhang@intel.com

John Fowler
Arizona State University
Email: john.fowler@asu.edu

Thomas W.Y. Chen
Taiwan Semiconductor Manufacturing Co.
Email: wychen@tsmc.com

J. George Shanthikumar
University of California, Berkeley
Email: shanthikumar@ieor.berkeley.edu

Chen-Fu Chien
National Tsing Hua University
Email: cfchien@mx.nthu.edu.tw

Paper Submission

All papers are to be submitted through the IEEE's **Manuscript Central** for Transactions on Automation Science and Engineering <http://mc.manuscriptcentral.com/t-ase>. Please select "Special Issue" under Manuscript Category of your submission. All manuscripts must be prepared according to the IEEE Transactions on Automation Science and Engineering publication guidelines <http://www.engr.uconn.edu/~ieeetase/>. Please address all inquiries to mike.zhang@intel.com.