



# Handbook of Silicon Wafer Cleaning Technology, Second Edition (Materials Science and Process Technology)

From William Andrew

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## Handbook of Silicon Wafer Cleaning Technology, Second Edition (Materials Science and Process Technology) From William Andrew

The second Edition of the *Handbook of Silicon Wafer Cleaning Technology* is intended to provide knowledge of wet, plasma, and other surface conditioning techniques used to manufacture integrated circuits. The integration of the clean processes into the device manufacturing flow will be presented with respect to other manufacturing steps such as thermal, implant, etching, and photolithography processes. The Handbook discusses both wet and plasma-based cleaning technologies that are used for removing contamination, particles, residue, and photoresist from wafer surfaces. Both the process and the equipment are covered. A review of the current cleaning technologies is included. Also, advanced cleaning technologies that are under investigation for next generation processing are covered; including supercritical fluid, laser, and cryoaerosol cleaning techniques. Additionally theoretical aspects of the cleaning technologies and how these processes affect the wafer is discussed such as device damage and surface roughening will be discussed. The analysis of the wafers surface is outlined. A discussion of the new materials and the changes required for the surface conditioning process used for manufacturing is also included.

- Focused on silicon wafer cleaning techniques including wet, plasma, and other surface conditioning techniques used to manufacture integrated circuits
- As this book covers the major technologies for removing contaminants, it is a reliable reference for anyone that manufactures integrated circuits, or supplies the semiconductor and microelectronics industries
- Covers processes and equipment, as well as new materials and changes required for the surface conditioning process
- Editors are two of the top names in the field and are both extensively published
- Discusses next generation processing techniques including supercritical fluid, laser, and cryoaerosol

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#### About the Author

Karen A. Reinhardt is Principle Consultant at Cameo Consulting in San Jose, California. At Cameo Consulting she assists companies investigating and assessing new and unique cleaning technologies that will allow realization of the ITRS roadmap with respect to smaller geometries, new materials, and the environmental issues associated with current cleaning processes. Karen has published over 30 technical papers ranging from plasma processing to damage characterization and cleaning technology assessment. She has been awarded eight patents. Karen formerly co-chaired the ITRS Surface Preparation Technical Working Group. Prior to forming a contracting and consulting company, Karen was employed at Novellus Systems and Advanced Micro Devices. Karen has a BS degree in Chemistry from the University of California at Riverside and a MS degree in Inorganic Chemistry from Texas Tech University.

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