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Nota di contenuto	Contents; Preface; The nature and characterization of small particles; Surface and micro-analytical methods for particle identification; The haze of a wafer: A new approach to monitor nano-sized particles; Particle transport and adhesion in an ultra-clean ion-beam sputter deposition process; Particle deposition from a carry-over layer during immersion rinsing; The use of surfactants to reduce particulate contamination on surfaces; The use of rectangular jets for surface decontamination; Ice-air blast cleaning: Case studies Development of a technique for glass cleaning in the course of demanufacturing of electronic products Mechanics of nanoparticle adhesion - A continuum approach; A new thermodynamic theory of adhesion of particles on surfaces; Particle adhesion on nanoscale rough surfaces; Advanced wet cleaning of sub-micrometer sized particles; Modified SC-1 solutions for silicon wafer cleaning; Investigation of ozonated DI water in semiconductor wafer cleaning; Possible post-CMP

cleaning processes for STI ceria slurries; The ideal ultrasonic parameters for delicate parts cleaning  
Effects of megasonics coupled with SC-1 process parameters on particle removal on 300-mm silicon wafers  
Influences of various parameters on microparticles removal during laser surface cleaning;  
Particle removal with pulsed-laser induced plasma over an extended area of a silicon wafer; Particle removal by collisions with energetic clusters

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## Sommario/riassunto

This volume documents the proceedings of the 8th International Symposium on Particles on Surfaces: Detection, Adhesion and Removal held in Providence, Rhode Island, June 24–26, 2002. The study of particles on surfaces is extremely crucial in a host of diverse technological areas, ranging from microelectronics to optics to biomedical. In a world of shrinking dimensions and with the tremendous interest in various nanotechnologies, the need to understand the physics of nanoparticles becomes quite patent. With the interest in and concern with nanoparticles comes the need for new and more sensitive metrological and analysis techniques to detect, quantitate, analyze and characterize very small particles on a host of substrates. This volume contains a total of 21 papers covering many ramifications of particles on surfaces. All manuscripts were rigorously peer-reviewed and all were revised and properly edited before inclusion in this volume. The book is divided into two parts: Particle Analysis/Characterization and General Cleaning-Related Topics and Particle Adhesion and Removal. The topics covered include: nature and characterization of small particles; surface and micro-analytical methods for particle identification; haze as a new method to monitor nano-sized particles; particle transport and adhesion in ion-beam sputter deposition process; particle deposition during immersion rinsing; ice-air blast cleaning; rectangular jets for surface decontamination; factors important in particle adhesion and removal; mechanics of nanoparticle adhesion; particle adhesion on nanoscale rough surfaces; various techniques for cleaning or removal of particles from different substrates including wet cleaning, use of modified SC-1 solutions, use of surfactants, ozonated DI water, ultrasonic, megasonic, laser, energetic clusters; and post-CMP cleaning. This volume, together with its predecessors, will be of immense value to anyone interested in the world of particles on surfaces, and will serve as a resource for information on contemporary R&D activity in this extremely technologically important area.

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