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Sommario/riassunto

Metrology is the science of measurement, which can be divided into three overlapping activities: (1) the definition of units of measurement, (2) the realization of units of measurement, and (3) the traceability of measurement units. Manufacturing metrology originally implicates the measurement of components and inputs for a manufacturing process to assure they are within specification requirements. It can also be extended to indicate the performance measurement of manufacturing equipment. This Special Issue covers papers revealing novel measurement methodologies and instrumentations for manufacturing metrology from the conventional industry to the frontier of the advanced hi-tech industry. Twenty-five papers are included in this Special Issue. These published papers can be categorized into four main groups, as follows: Length measurement: covering new designs, from micro/nanogap measurement with laser triangulation sensors and laser interferometers to very-long-distance, newly developed mode-locked femtosecond lasers. Surface profile and form measurements: covering technologies with new confocal sensors and imagine sensors: in situ and on-machine measurements. Angle measurements: these include a new 2D precision level design, a review of angle measurement with mode-locked femtosecond lasers, and multi-axis machine tool squareness measurement. Other laboratory systems: these include a water cooling temperature control system and a computer-aided

inspection framework for CMM performance evaluation.