Best Solutions for Supporting Production of State-of-the-art Semiconductor Devices in Nanometer Era

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AS regards the situation surrounding semiconductor devices, meeting the needs of consumers (starting with digital home appliances, mobile phones, and car electronics) as a matter of course and supporting the wave of worldwide economic growth led by China are placing even greater demands on semiconductors.

Semiconductor microfabrication technology has shifted from the early days of the micron (μm) era, through the development stages of the sub-micron era (i.e. below 1 μm), and into the nanometer (nm) era of recent times. And it is no exaggeration to say that ultra-microfabrication technology at the level of several tens of nanometers will hold the key to the future of semiconductor devices. In particular, as the transistor itself reaches its physical limitation, most emphasis at present is being placed on the development of new materials and microfabrication, inspection, and analysis systems that take full advantage of nano-technologies.

In this special issue, Hitachi Group's high-quality, high-efficiency systems for fabrication, inspection, and analysis of semiconductors — that is, for supporting production of devices, starting with the 90-nm node and moving up to the state-of-the-art 65-nm node — are described. Above all, this is a series of systems — for nano-level inspection of minute defects that accompany ultra-microfabrication technology and for evaluation and analysis in the sub-nanometer domain — that aims to improve the fabrication process and thereby contribute to higher quality and higher process yields.

As activities concerning business restructuring, alliances, consortia, etc. gather pace, Hitachi Group will continue to provide new technologies and systems that will anticipate the next-generation of device fabrication technologies. From now onwards, by utilizing such systems for fabrication, inspection, and analysis — which make full use of cutting-edge technologies — Hitachi Group will strive to provide timely "best solutions" in response to the varied needs of its customers.