IBM and Toppan to Jointly Develop Advanced Photomasks for 45nm

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Goal Is Early Establishment of 45nm Photomask Production Process

IBM Corporation and Toppan Printing Co., Ltd. today announced an agreement to jointly develop photomasks for next generation, 45-nanometer semiconductor manufacturing processes. The two companies will develop a photomask process intended to enable early production of 45nm devices. Approximately US$200 million is expected to be invested by the two companies.

Development work will be conducted at IBM's plant in Burlington, Vermont, USA, and evaluated at IBM's advanced 300-millimeter semiconductor wafer production facility in East Fishkill, New York, USA. As part of this development work, Toppan will assign engineers to work with IBM's mask development team in Burlington. By combining their respective 65nm photomask manufacturing technologies, which have already been developed, the two companies have set a goal of developing 45nm photomasks that will be ready for production around mid-2007, when industry demand is expected to gather momentum. Toppan plans to transfer the jointly developed manufacturing process from IBM's Burlington operation to its own plants, and to establish its own production system in order to provide customers with 45nm photomasks for the early stages of commercialization.

Semiconductors have become increasingly sophisticated due to growing demand for telecommunication devices and highly complex and multifunctional digital consumer electronic products. Advanced

photomasks are a critical part of the semiconductor production process. It is vital that semiconductor manufacturers and photomask manufacturers work closely together to develop the chip manufacturing process and the appropriate photomask for that process at the same time.

IBM is a recognized innovator in the chip industry for its development and introduction of semiconductor process technologies and materials, often collaborating with industry leaders. Technologies developed by IBM are used in its fabs and in the manufacturing processes of other semiconductor manufacturers. With this joint photomask development initiative, industry-wide R&D efforts for commercial production of 45nm technology is likely to accelerate.

"IBM and Toppan will bring together formidable skills and resources to create an industry-leading 45-nanometer photomask technology," said Dr. Douglas Grose, general manager, technology development and manufacturing, IBM. "This agreement is a logical extension of our strategy to develop a common, global process technology platform with key semiconductor fabrication companies. Joining with Toppan in this development effort will ensure IBM's continued mask technology leadership to meet the future semiconductor needs of IBM systems and our OEM clients worldwide."

Naoki Adachi, president of Toppan, said, "We are delighted to conclude this joint development agreement with IBM, the world's most advanced semiconductor processing company. We believe this joint initiative will place IBM and Toppan at the forefront of advanced photomask technology development, and thus will enable us to contribute a great deal to the technological innovation in the world's semiconductor industry. The expertise accumulated in cooperation with IBM will help Toppan maintain its position as the world's top photomask manufacturer, even at the 45nm process node."