High Capacity Blu-ray Disc-ROM Mastering System

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Sony today announced the successful development of the Blu-ray Disc ROM (BD-ROM) mastering system for Blu-ray Disc pre-recorded content. Key benefits of this new system include low cost operation, increased reliability and compact size. The PTR-3000 system uses a blue laser heat chemical reaction based on Phase Transition Mastering (PTM) technologies, and requires less than half of the processes and only 1/5 the space of a conventional DVD mastering system. In addition to the mastering of BD-ROM discs, it enables the mastering of conventional DVD-ROM discs in one system. The PTR-3000 mastering system will be available starting this fall.

With this PTM technology-based mastering system, Sony and Sony Disc Technology Inc. actively supports the implementation of the BD-ROM format for high capacity and high definition video content.

Sony plans to create a total mass production BD-ROM test line,

including PTR-3000 and BD-ROM disc replication line, in Terre Haute, Indiana, USA. This line will operate in tandem with the existing Sony Disc Technology Inc. Shizuoka technology center in Japan.
Since larger capacity optical discs require the pit to be smaller on the disc, current DVD mastering technology was not compatible for use in next generation optical discs.

PTM technology uses a special inorganic resist which is comprised of metal oxide. It utilizes a chemical heat reaction generated from the changing phase of amorphous to crystal, instead of photo resist, in the fine pitch recording of electron beam or deep UV laser. This laser uses 405nm wavelength consumer blue laser to make the smaller pit.

PTR-3000 consists of 3 simple units: Sputtering, Cutting and Developing. In the manufacturing process, instead of a glass substrate and photo resist, the system uses a silicon wafer and inorganic resist that eliminates the pre-process and conductivity process. As a result, it became possible to directly duplicate the stumper. Therefore, the PTM process and current master galvanizing process combined reduce the mastering processes from 11 to 5 process steps.

Source: Sony