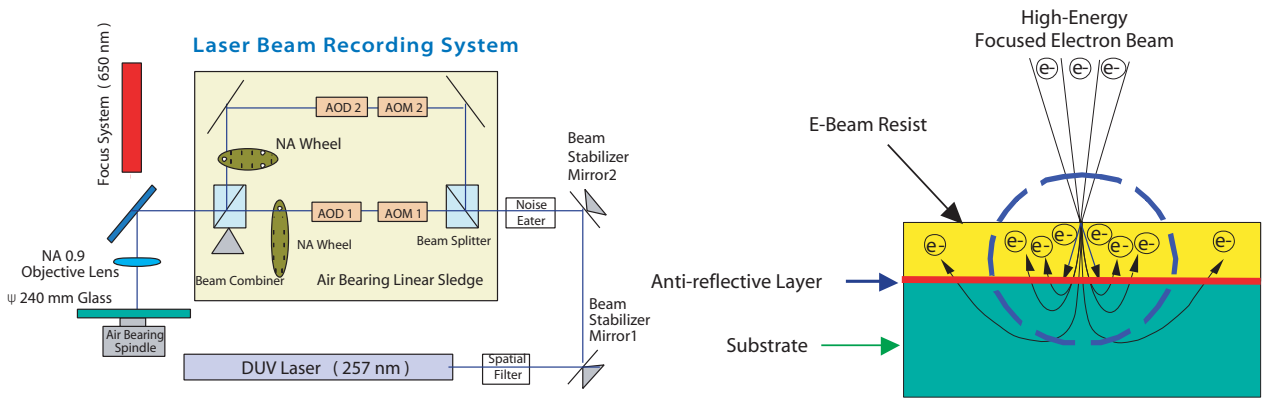


Master-Disk Fabrication Technology 光碟刻版技術

ITRI researchers are rendering the recording beam size to below 100 nm by shortening light source wavelengths, and reducing recording spot sizes through suitable photoresist and advanced optics and recording materials. We expect this to bring the storage capacity to the 100 GB range.

利用縮短刻版光源波長方法，將刻版光束大小縮小至100奈米以下，並使用適當光阻、先進光學技術與記錄材料使記錄光點尺寸小於100奈米；綜合以上技術，可將光儲存密度提升到100 GB以上。



Laser Beam Recording (LBR)

- Selection of new high-contrast photoresist
- Using solid immersion lens head or superresolution near-field structure to breakthrough the diffraction limit

Electron Beam Recording (EBR)

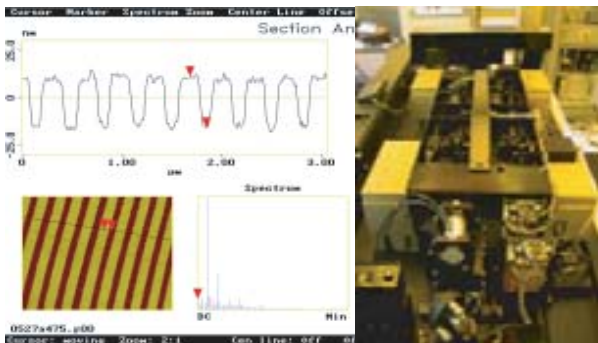
- Adopting a field emission system to reduce beam diameter and current density
- Reducing back-scattered electrons by an antireflective layer
- Adopting chemical amplification resist to reducing exposure dosage

Targets

- Fabricating the stamper with track pitch smaller than 100 nm and minimum pit length smaller than 100 nm to reach the 100 GB capacity by adopting LBR/SPL/EBR technology
- Developing Scanning Probe Lithography (SPL) technology to improve lithography resolution and to raise the write speed by employing multi-probes

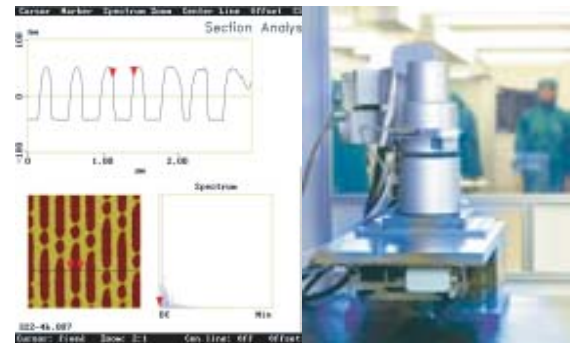
Results

LBR



LBR Mastering: 25 GB capacity with 0.35 μm track pitch

EBR



EBR Mastering: 17 GB capacity with 0.4 μm track pitch