**ON THE HORIZON**

Scientists, computer engineers, and entrepreneurs of all kinds are working to develop new and improved hardware devices that will make information access faster and easier. After all, much is at stake—the millions and billions of dollars in revenue to be shared by successful individuals and companies. Inventors are also motivated by the great satisfaction that comes with creating something new and better.

**Increased Optical Disc Storage Capacity**

Computer users needing huge storage capacities may be pleased with a new type of optical disc storage called FMD-ROM. A Fluorescent Multi-Layer Disc (FMD) holds up to 140 gigabytes (GB) of data. This capacity is currently 215 times greater than a CD-ROM (0.65 GB) and 23 times greater than a DVD-ROM (6 GB). FMD-ROM discs contain fluorescent materials embedded in the pits and grooves of all 10 or more layers. The fluorescent materials are stimulated to produce coherent and incoherent light when in contact with a laser. Data is stored in the incoherent light. Because the technology is not based on reflection, multiple layers are read at the same time.

**Improved Monitors**

Computer monitors will become even thinner and more flexible. New materials will enable manufacturers to create monitors that can be rolled up like a piece of paper. At the same time, monitor resolution will continue to increase.

**Holographic Storage**

Storage needs are ballooning because of the increasing use of multimedia files. Indeed, some experts estimate that storage needs are doubling every 100 days and that the answer is holographic storage. Its multidimensional images allow the layering of digitized information throughout the holograph, thereby outpacing the capacity of today’s magnetic and optical discs.

**Electronic Paper**

Instead of scrolling through the pages of *The New York Times* on your monitor, one day soon you will read the news on a tablet of electronic paper that instantly displays stories as the news happens. Companies are developing the new technology, which uses “ink” consisting of a clear liquid of microcapsules. These miniscule containers hold white titanium dioxide and black carbon particles that are treated to have alternating positive and negative electrical charges. When stimulated with a negative electrical field through a display driver, the white particles move to the front. When a positive field is applied, the black particles move to the front. The combination of white and black creates characters and images.