

About the Technology

Innovative Media Technology--Synthetic Ferrimagnetic Media

Synthetic Ferrimagnetic (SFM) Media employs additional layers of magnetic and non-magnetic materials that allow increased recording density three times greater than what was thought to be possible due to thermal instability.

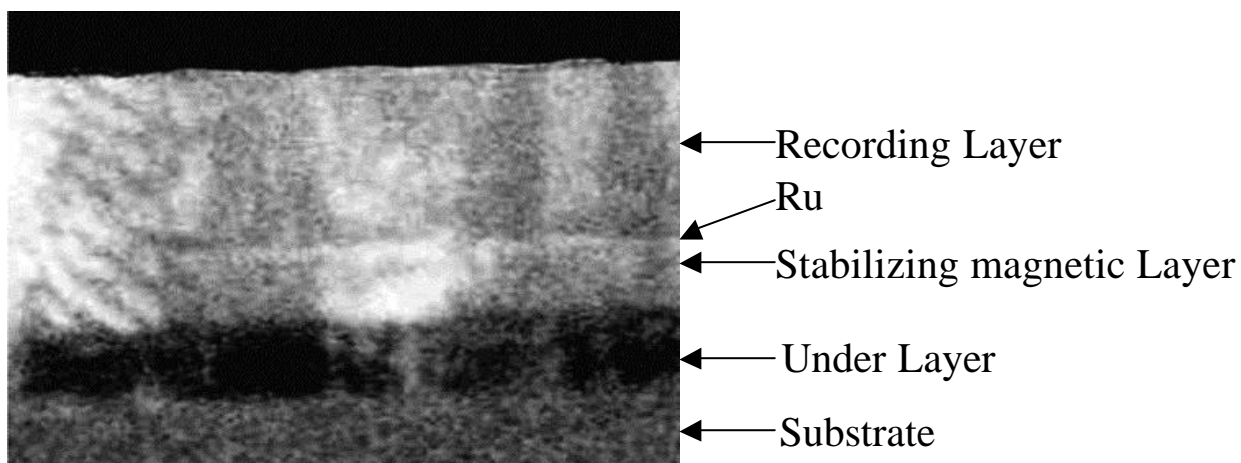


Photo #1: Photograph of Synthetic Ferrimagnetic Media Structure

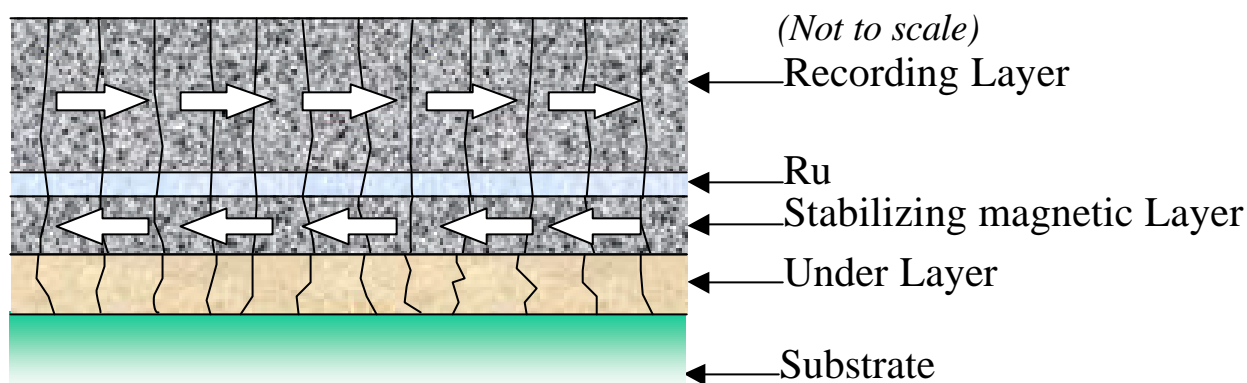


Photo #2: Diagram of Synthetic Ferrimagnetic Media Structure

A New Type of Recording Medium

Using Synthetic Ferrimagnetic Media's resistance to thermal instability, Fujitsu was able for the first time ever to demonstrate a stable recording density of more than 100Gbits/in². With this improved configuration, signal decay is predicted to be less than 1 percent in five years thus achieving even greater data stability than current hard disk drives.

New Head Technology: Double-specular Spin Valve Head

A double-specular GMR (Giant Magneto-Resistive) read head developed by Fujitsu achieves a higher playback output level than existing models by at least two times, and a high-precision write head that increases data recording ability by over 30 percent. By adding an extra oxide layer, the

mean free path of the electrons is increased making the head more sensitive and able to detect smaller signals from the media.

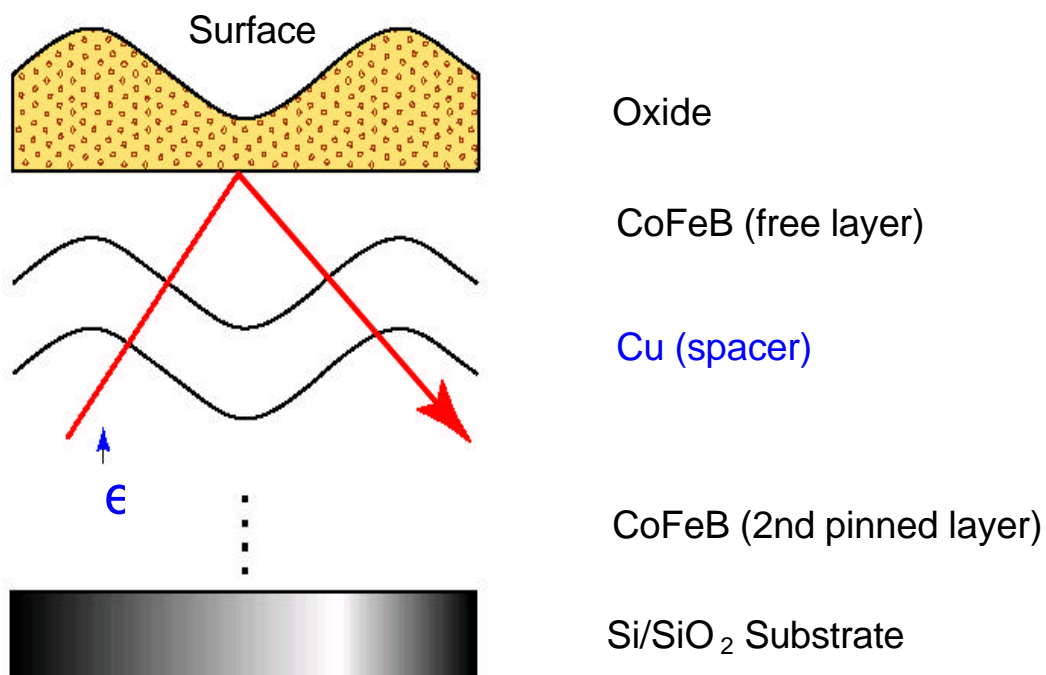


Diagram #2: Single Specular Spin Valve GMR, High Current Efficiency

Using these new technologies, Fujitsu Laboratories has achieved a recording density more than 100Gbits/in² – considered, until now, the limit for longitudinal magnetic recording. Fujitsu is now working to develop technology necessary to achieve a density of 300Gbits/in².

Increased Data Recording Performance

Using process technology that allows precise manufacturing of recording heads with a core width of 0.2μm or less and new materials designed to produce a powerful magnetic field, Fujitsu was able to increase data recording power by 30 percent over conventional methods. Thus, allowing for recording of extremely narrow tracks onto a recording medium with a width of 0.16μm. It was found that a read core with a width of 0.12μm could generate sufficient read signal amplitude from this recorded data.

The Fujitsu Laboratories research team is now working toward achieving recording densities around 300Gbits/in² by improving these technologies.

Explanation of Terminology

(*1) Synthetic Ferrimagnetic Media: Media consisting of two or more magnetic layers that are antiferromagnetically coupled by a nonmagnetic spacer such as Ruthenium (Ru). This media allows thermally stable recording at high resolution.

(*2) Double Specular Spin Valve GMR Head: A Giant Magneto Resistive read head having two specular scattering layers. Conduction electron flow is confined by specularly reflective layers thus increasing spin dependent scattering at boundaries.