

Micromagnetic Study of Switching Mode Behavior on Perpendicularly Magnetized Nano-Dot at a Room Temperature

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Abstract— Non volatile magnetic storage with high densities and fast rate data transfer is a primary need in recent computing technology. Perpendicular magnetized nano-dot is proposed to be an alternative media to make it real. The Switching mode behavior on perpendicularly magnetized nano-dot with volume $50 \text{ nm} \times 50 \text{ nm} \times 20 \text{ nm}$ at a room temperature for magnetic storage application has been investigated by solved Landau Lifshitz-Gilbert equation. The result is the material properties which quantitatively express as quality factor greatly affect the switching time. Critical value of quality factor becomes a boundary on the switching mode.

Index Terms— Magnetic storage, perpendicular anisotropy, switching mode, room temperature, quality factor.