

MAGVISION

KERR SYSTEM

High resolution imager

- 6.4 megapixels @ 60 FPS
- 78% quantum efficiency
- Real-time differential imaging with noise suppression

Patented electromagnet

- 0.5% field uniformity over 4 mm
- Up to **1 T** without chiller
- 8X reduced Faraday effect

Piezo actuated 5-axis stage

- Fully automatic sample stabilization for long exposures
- Software-controlled piezo actuation for remote control

Ultrabright 2200 lumens LED

- Narrow bandwidth for high sensitivity - 50 nm FWHM
- Enables fast exposures for real-time domain viewing

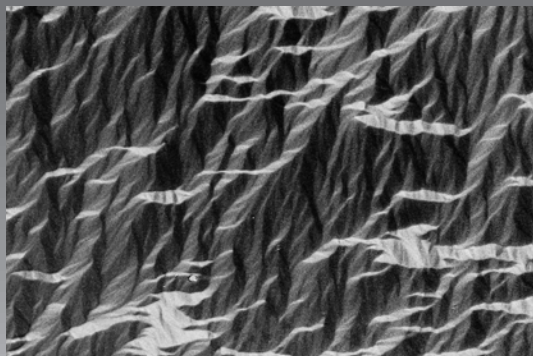
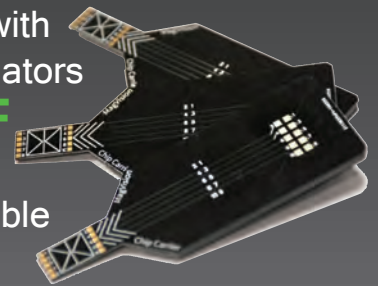
Graphic User Interface

- Fully automated measurements
- Integrated interfacing with SCPI instruments for *in situ* electrical measurements

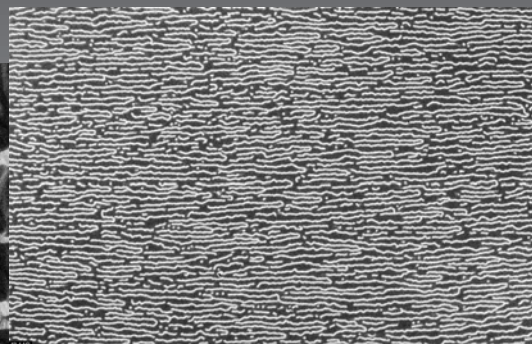


Sample excitation

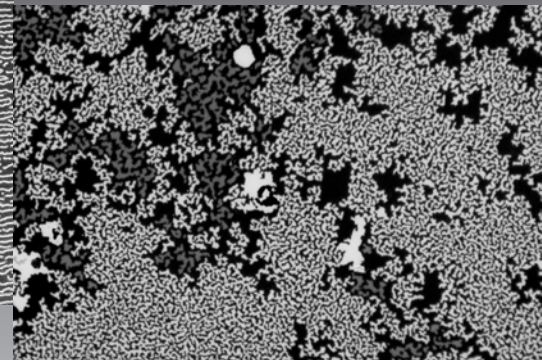
- Compatible with micromanipulators for **DC/ RF** probing
- Interchangeable 10-pad chip carrier stage for wire bonding



In-plane domains on a 1 nm CoFeB thin film



Electrically-driven chiral stripes and skyrmions on a [Pt/Co/Fe/Ir]₂ stack

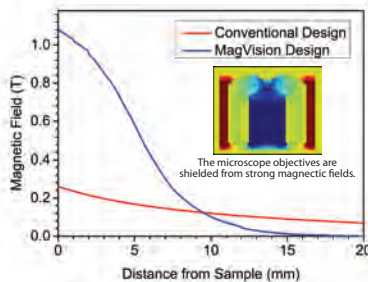


PMA stripe domains on a CoFeB/MgO/CoFeB thin film

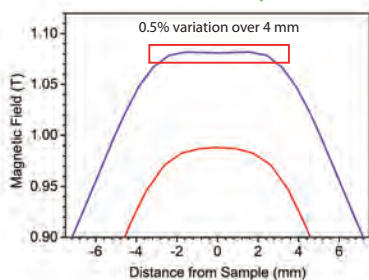
Patented electromagnet design

- Innovative closed-flux design
- Increased maximal field strength by a factor of 4
- Objectives experience 8 times less magnetic field - eliminates Faraday effect
- Field uniformity is top-of-class at 0.5 % over 4 mm

Magnetic field profile

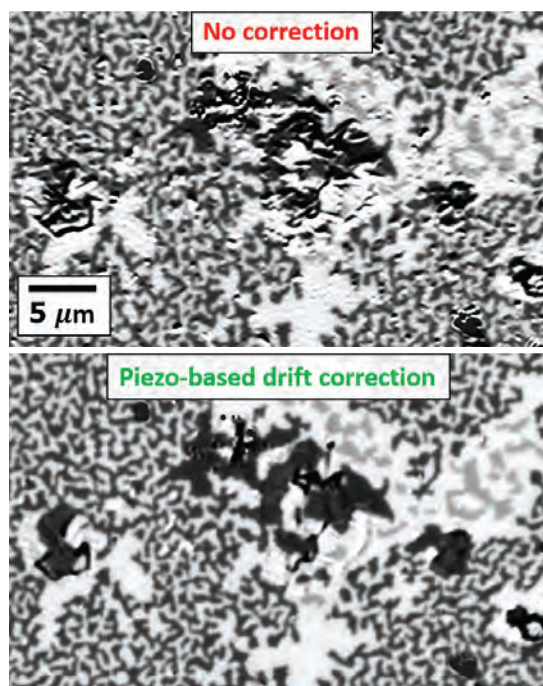


Uniformity



3D Image Stabilization

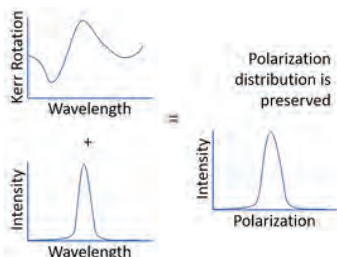
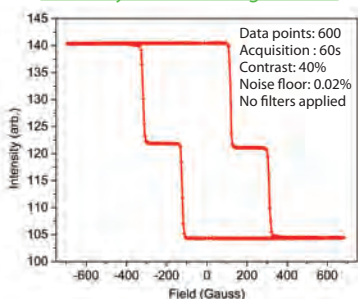
- Fully automatic real-time image stabilization
- Both hardware and software corrections
- Reduces drift to less than 0.2 pixel (8nm)



Extreme Sensitivity

- Optimized light path design
- Exhaustively tested optical components ensure clean magnetic signal

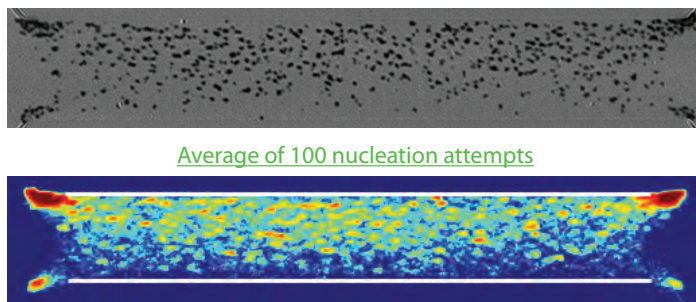
Magnetic hysteresis loop of two 0.9 nm CoFeB layers across a MgO barrier



Experiment Designer

- For-loop structure allows for multiple parameter sweeps
- Easy to collect statistical data using only a few lines

SOT-induced domain nucleation caused by a single current



Specifications

| | | |
|--|--|---|
| Light source | 2200 Lumens ultrabright LED lamp | Size / Weight Main System: 60 x 50 x 60cm, 25kg Power Supply Tower: 60 x 60 x 30cm, 10kg Total: 120 x 60 x 60, 35kg |
| Camera | 6.4 Megapixel @ 60FPS >78% Quantum efficiency | |
| Resolution | Camera: 40nm Optical: 300nm | Power Requirement 230VAC ± 10%, 13Amp Single Phase |
| Electrical Interface | MagVision chip carriers with 10-pin electrical connections Two micropositioners for probing | |
| Magnetic Field Perpendicular Option | Flux strength: ±1 Tesla Closed-flux design | |
| Magnetic Field Combined Option | OOP: 0.1 Tesla IP: 0.6 Tesla | |

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