GUIDED-MODE RESONANCE THERMAL TRANSDUCERS FOR HEAT-ASSISTED MAGNETIC RECORDING

(UTA 14-09)

Technology Need:

Data storage technology is progressing at a rapid pace, with emphasis on fast data storage. Heat assisted magnetic recording (HAMR) is a technology that magnetically records data using laser thermal assistance. In current methods, the lens focused laser beam fixated on the medium suffers from the diffraction limit and thus may have a diameter exceeding the diffraction limit for the modern high density magnetic storage. The recording spot must be considerably smaller than the diffraction limit.

Solution/ Offering:

Researchers at UT Arlington have developed new near-field transducers (NFTs) for effective heat transfer into magnetic film. This technology uses HAMR with Guided mode resonance effect using a unique type of lens made with a specific element that can serve as effective thermal or near-field transducers yielding recording spots. It is an improved means to accomplish HAMR as the energy transfer is made more efficient by applying resonance effects simultaneously with plasmonics. It can be a simpler and lighter device to be used for HAMR.

Meet the Inventor

Robert Magnusson is the Texas Instruments Distinguished University Chair in Nano Electronics and Professor of Electrical Engineering at UT Arlington. He has served as an associate editor of Applied Optics and Optical Engineering and as general chair for the Diffractive Optics and Micro Optics topical meeting. His area of expertise includes theory and experiment of periodic optical filters, diffractive optics, thin film optics, waveguide optics, holographic interferometry, optical properties of material.

Value Proposition:

✓ Faster Data Write Speeds in HAMR

Industrial application:

✓ Magnetic data storage is commonly found in
  1. Personal Computers
  2. Workstations
  3. Servers
  4. Audio/Video Recording Company

Patent Status:

✓ Patent Pending
  14/505,469

Next Steps:

✓ Prototype and testing
✓ Seeking R&D and Commercialization partners

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