

MICROHOLAS

Microholographic Data Disk for Archival Storage



Project Number: 511437,
Instrument: STREP

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Timeline

Start Date: 1 July 2004
End Date: 30 June 2007

Budget

Overall Cost: 1.98 million €
Funding: 1.5 million €

Project Partners

- UNIVERSITA POLITECNICA DELLE MARCHE, IT
- JENOPTIK LASER, OPTIK, SYSTEME GMBH, DE
- UNIVERSITE D'ANGERS, FR
- OPTILINK KFT, HU
- BUDAPESTI MUSZAKI ES
GAZDASAGTUDOMANYI EGYETEM, HU

Vision & Aim

The overall objective of MICROHOLAS is to implement the microholographic technique for optical storage on CD/DVD-like disks for digital data. The project aims at long-term storage by utilizing periodic nanostructures in the disk volume rather than on the surface as in conventional optical storage systems. A prototype read/write device will be designed and constructed to demonstrate the feasibility of volume microholographic storage on a rotating removable disk. Bit-formatted data is stored as microholograms in a thin photopolymer layer.

The microholographic recording technique allows for an increase of the storage capacity far beyond the limits of current DVDs and next generation blue-Ray disks by applying wavelength multiplexing combined with multilayer storage. The proposed new and original system relies on and benefits from well-established CD and DVD technology. This will ease realizing the device and open a viable route for Terabyte storage. The design and construction of the demonstrator test bed will be accompanied by research focused on characterization and development of photopolymers with improved properties as required for long-term and Terabyte storage.

A thorough testing programme starting from initial laboratory measurements up to dynamic tests with the device under development will be undertaken to optimise the design at all stages of the technological realization. In the final phase an experimental system will be tested for data archiving. The implementation of microholography for digital data storage on a disk has the potential to become a major breakthrough in realizing Terabyte optical storage. Additionally, innovation beyond the state of the art is expected with new and improved photopolymers as well as with optical and laser components required for the device. At the end of the project a microholographic storage disk and a demonstrator device will be available which will have been successfully tested for archival storage.

