

Principal Researcher	Masahiko Yamamoto			Number of Researchers	3	
Research Institution · Department · Title	Professor · Graduate School of Engineering · Osaka University			Location of Institution	Suita, Osaka	
Title of Project	Ultra-High Density Magnetic Memory Cells					
Abstract of Research Project	<p>The magnetic memory cells have the potential for high-speed and non-volatility. In order to accomplish their ultra-high density in future, advanced science and technology of the magnetic memory cells are required. We chose magnetic memory cells having the closed magnetic paths and non-producing stray fields as strong candidates and study about the following points.</p> <p>(1)To examine and optimize processing of micro-fabrication for magnetic memory cells having the new structure. i.e. having various closed and/or non-interfering magnetic circuit.</p> <p>(2)To observe structure and magnetization states of the memory cells by scanning probe microscopy (SPM) including magnetic force microscopy (MFM), and clarify a structural optimal of magnetic memory cells.</p> <p>(3)To examine fundamental behavior of memory for operation through measurement of change of the electric resistance in the optimized memory cells under applied magnetic field.</p> <p>(4)To clarify writing ability by tests of over-writing by using the optimal strength and direction of magnetic field.</p>					
References	<p>Uniaxial magnetic anisotropy of Ni-Fe films induced by Fe dot-arrays on Ni-Fe films, Ryoichi Nakatani, <u>Masahiko Yamamoto</u>, Hiroataka Yakame, Yasuhiro Kamada and Yoshio Kawamura, J. Mag. Mag. Mat. Vol. 239, No.1-3, (2002) pp. 231-233.</p> <p>“ Memory, transmission, computation of spin information ” from “ superlattice and artificial materials ” and “ ultra-high density magnetic memory cell ”</p> <p><u>Masahiko Yamamoto</u>, Production and technology Vo.53, No.4 (2001) pp.56-60.</p>					
Term of Project	Fiscal years 2002-2006. (5years)					
Budget Allocation	FY2002	FY2003	FY2004	FY2005	FY2006	Total
(in thousand of yen)	34,400	18,600	13,000	6,600	6,600	79,200