

# Shingo Tamaru

Project Scientist at Carnegie Mellon University  
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## Education history and thesis title

- Jan. 2000-May 2005 Ph.D. Degree in Electrical & Computer Engineering Dept., Carnegie Mellon University, Pittsburgh, USA
  - GPA: 3.98
  - Thesis: Study of magnetostatic mode spin waves in soft magnetic thin films using scanning Kerr imaging (Detail of this research project is found in my thesis available from <http://tamaru.homeip.net/~shingo/thesis.pdf>)
- May 1997-Dec. 1999: MS Degree in Electrical & Computer Engineering Dept., Carnegie Mellon University, Pittsburgh, USA
  - GPA: 4.00
  - Thesis: Development of scanning Kerr effect microscope system for measuring head field rise time in magnetic recording heads
- Apr. 1991-Mar. 1993: MS Degree in Applied Physics Dept., Faculty of Engineering, Hokkaido University, Sapporo, Japan
  - GPA: 4.00
  - Thesis: Fabrication of optical waveguide in polymer membrane for optical integrated circuit application
- Apr. 1987-Mar. 1991: BS Degree in Applied Physics Dept., Faculty of Science and Engineering, Waseda University, Tokyo, Japan
  - GPA: 3.20
  - Thesis: Study of long range ordered structures in polymeric systems using small angle X-ray diffraction

## Employment history and job functions

- Feb. 2009-Present: Project Scientist at Carnegie Mellon University, Pittsburgh, PA USA
  - Study of mutual phase locking mechanism of multiple spin torque oscillators
  - Utilization of surface acoustic waves for realizing a friction/wear free mechanical interface
  - Improvement/upgrading of a scanning tunneling microscope system
- July 2005-Jan. 2009: Research Staff Member at Seagate Technology, Pittsburgh, PA USA
  - May 2007-Jan. 2009: Experimental study of light delivery system in HAMR heads
  - July 2005-May 2007: Study of recording physics in ferroelectric probe storage device
- Apr. 2000-Jun 2000: Internship at Almaden Research Center, IBM Corp., San Jose, CA USA
  - Performance evaluation of high speed digital circuits
- Apr. 1993-Sep. 1996: Engineer in O&E Division, Magnetic Dept., Japan Energy Corporation (Formerly Nikko Kyoseki Co. Ltd.), Toda, Japan
  - Quality assurance and performance evaluation of magnetic heads for hard disk drives

## Skills and experiences

- Magnetic characterization measurement equipment: VSM, AGM, BH loop tracer
- Scanning probe microscopy: AFM, SNOM, STM and its derivative measurements
- Analog circuit design/fabrication/evaluation
- High speed digital circuit design/fabrication/evaluation

- Electrical measurement equipment: analog/digital/sampling oscilloscope, time domain reflectometer, spectrum analyzer, network analyzer, dynamic signal analyzer
- Optical system design/construction/analysis
- Measurement system integration and automation
- Production head evaluation equipment: GUZIK spin stand, WYKO surface profilometer, KOYO flying height tester, KOYO CSS tester
- Operating systems: Windows, MS-DOS, Unix
- Programming languages: Matlab, Mathematica, C, Latex, LabView, LabWindows, VHDL
- Language: Fluent in Japanese, English

### **Publications**

- S. Tamaru, J.A. Bain, R.J.M. van de Veerdonk, T.M. Crawford, M. Covington, M.H. Kryder, "Study of magnetic mode excitation and relaxation in Permalloy films using scanning Kerr imaging", Phys. Rev. B, submitted for publication
- S. Tamaru, J.A. Bain, R.J.M. van de Veerdonk, T.M. Crawford, M. Covington, M.H. Kryder, "Imaging of quantized magnetostatic modes using spatially resolved ferromagnetic resonance", J. Appl. Phys., 91 (10): 8034 (2002)
- G. Ju, R.J.M. van de Veerdonk, S. Tamaru, T.M. Crawford, G. Parker, Y. Kubota, M.L. Wu, S. Batra, D. Weller, J.A. Bain, "High frequency dynamics of the soft underlayer in perpendicular recording system", J. Appl. Phys., 91 (10): 8052 (2002)
- R.J.M. van de Veerdonk, G. Ju, E.B. Svedberg, D. Weller, S. Tamaru, J.T. Wolfson, J.A. Bain, "Real-time observation of sub-nanosecond magnetic switching in perpendicular multilayers", J. Magn. Magn. Mater., 235 (1-3): 138 (2001)
- G.P. Ju, R.J.M. van de Veerdonk, E.B. Svedberg, K.W. Wierman, D. Weller, K.J. Howard, M.H. Kryder, S. Tamaru, J.T. Wolfson, J.A. Bain, "Sub-nanosecond non-arrhenius magnetic switching in perpendicular multilayers", IEEE Trans. Magn., 37 (4): 1570 (2001)

### **Presentations**

- "Study of magnetic mode excitation and relaxation in Permalloy films using scanning Kerr imaging", Microdomain research workshop in Tokyo, Oct. 2002
- "Study of magnetic mode excitation and relaxation in Permalloy films using scanning Kerr imaging", Invited talk in the session of magnetization dynamics, Intermag Europe in Amsterdam, May 2002
- "Imaging of quantized magnetostatic modes using spatially resolved ferromagnetic resonance", MMM conference in Seattle, Nov. 2001

### **Awards/Fellowships**

- 1999 IDEMA student fellowship, first place
- 2000-2001 IBM graduate student fellowship

### **Teaching**

- Teaching assistant in "Data Storage Systems Design", Spring 2002

### **Work authorization in US**

- Green card granted in Nov. 2008

### **Availability**

- From Fall 2010