

TABLE OF CONTENTS

<i>Preface</i>	ix
<i>Conference Organization</i>	xi
Section I	
Storage: Business and Technology Overview	1
1. Magnetic Recording: Challenges and Opportunities <i>J. Best, V. Marrello</i>	3
2. The Disk Drive Industry's Dynamic Past <i>J.N. Porter</i>	19
3. Magnetic Recording Heads for 60 Gb/in ² and Beyond <i>F.H. Liu, K. Stoev, X. Shi, H.C. Tong, M. Gibbons, M. Re</i>	34
4. On The Road to 100 Gb/in ² - Advanced High Performance Media <i>M. Russak</i>	45
5. Review of Thin-Film Write Heads for High Data Rate Recording <i>Y. Hsu, K Klaassen</i>	52
Section II	
Magnetic Disks	61
6. Directions in Disk Drive Tribology: Laser Texture and Beyond <i>P.M. Baumgart, A.C. Tam</i>	63
7. Advanced Media for Extremely High-Density Longitudinal Magnetic Recording <i>B.R. Acharya, E.N. Abarra, A. Inomata, I. Okamoto</i>	69
8. Molecular Conformation and Tribology Performance of Perflouropolyether Lubricant <i>L.J. Huang, P. Henry, S. Chang</i>	84
9. Magnetic Properties of Nickel-Phosphorus Deposits with Controllable Phosphorus Contents Prepared by Electrodeposition <i>C.-C. Hu, A. Bai</i>	93
Section III	
Electrodeposited Magnetic Nanostructures	99
10. Patterned Electrodeposition of CoPt Micromagnets <i>P. Evans, I. Zana, G. Zangari</i>	101

11.	Fabrication and Magnetic Properties of Arrays of Electrodeposited Cylinders <i>M. Shima, M. Hwang, M. Farhoud, T.A. Savas, A. Tkaczyk, J.U.C. Parrochon, W. Escoffier, H.I. Smith, C.A. Ross, W. Schwarzacher</i>	111
12.	Magnetic Anisotropy Phenomena in Electrodeposited Heterostructure Devices <i>K. Attenborough, L. Perez-Garcia, M. Cerisier, J.-P. Celis, J. De Boeck</i>	125
13.	Electrodeposition of Co Thin Films and Co/Cu Spin-Valves on Silicon <i>A.A. Pasa, M.L. Munford, E Voltolini, L. Seligman, M. Sardela, M.L. Sartorelli</i>	137
14.	Ultrathin Electrodeposited Magnetic Films: Relevant for Magnetoelectronic Applications? <i>W. Schindler, Th. Koop, J. Kirschner</i>	148
15.	Electrodeposited GMR Co/Cu Multilayers <i>N.V. Myung, B.Y. Yoo, M Schwartz, K Nobe</i>	154
Section IV Plated Materials for Magnetic Heads		165
16.	Fabrication of High-B _s Soft Magnetic Thin Films by an Electrodeposition Technique for Next-Generation Magnetic Recording Field <i>T. Osaka, T. Yokoshima, T. Nakanishi</i>	167
17.	Pulsed Electrodeposition of Soft Magnetic CoNiFe Thin Films <i>T. Nakanishi, M. Ozaki, H.-S. Nam, T. Yokoshima, T. Osaka</i>	176
18.	The Effect of Preparation Conditions on the Magnetic Properties of Electroplated High-B _s CoNiFe Films <i>M. Saito, N. Ishiwata, K. Ohashi</i>	185
19.	The Structural and Magnetic Properties of Pulsed Current Electrodeposited Co and Co-Ni Alloy Films <i>K. Maruyama, A. Matsushita, M. Imai, H. Numata, O. Nittono</i>	197
20.	Magnetic Properties and Corrosion Resistance of Electrodeposited Fe-Co-Ni Alloys <i>X. Liu, G. Zangari</i>	211
21.	Electrodeposition of Soft CoNiFe, CoNiFeO and CoFeO Films with High Magnetic Saturation and High Resistivity <i>I. Tabakovic, V. Inturi, S. Riemer, A. Morrone, P. Jallen</i>	220

22.	Morphology of Soft Magnetic CoNiFe Films Electrodeposited in the Presence of Saccharin and Sodium Lauryl Sulfate <i>I. Tabakovic, V. Inturi, S. Riemer, P. Jallen, P. McGeehin</i>	231
23.	Corrosion Behavior of Electrodeposited Soft Magnetic NiFe, CoNiFe, CoNiFeO and CoFe Alloys <i>S. Riemer, I. Tabakovic, V. Inturi, P. Jallen</i>	241
24.	Origin of Inclusion of Foreign Elements During the Electrodeposition of Soft Magnetic NiFe, CoNiFe, and CoNiFeO Alloys: SIMS and XPS Analysis <i>I. Tabakovic, S. Riemer, R. Kvitek, P. Jallen, V. Inturi</i>	253
25.	Electroplated CoFeCu Films in Write Heads: Plating and Magnetic Evaluation <i>E.I. Cooper, Y. Hsu, L.T. Romankiw, J.G. McCord, V. Nikitin</i>	264
26.	Magnetic Properties of Copper Laminated Magnetic CoFeCu Films Deposited from a Single Plating Bath by Current Modulation <i>P. Trouilloud, L.T. Romankiw, J.-W. Chang, K.C. Lin</i>	276
27.	Influence of Phosphorus on the Corrosion Properties of Electrodeposited CoFeCu Soft Magnetic Thin Films <i>R. Bell, E.E. Kalu</i>	287
28.	Micro-Pattern Formation for Magnetic Recording Heads Using Electroless CoFeB Deposition <i>T. Yokoshima, S. Nakamura, D. Kaneko, T. Osaka, S. Takefusa, A. Tanaka</i>	297
29.	Electrodeposited CoP: Structural and Magnetic Properties <i>W. Ruythooren, E. de Wit, J. De Boeck, J.-P. Celis</i>	309
Section V Magnetic Structures, Fabrication and Properties		317
30.	The Impact of Resolution Enhancement Technology on TFH Industry <i>L. Tong</i>	319
31.	Nanometer Trackwidth Definition by E-Beam Lithography for Advanced Magnetic Recording Heads <i>K. Lin, J.-W. Chang, Z. Cui, K. Ju, S. Araki</i>	332
32.	Focused Ion beam Production Micromachining of Magnetic Head Write Poles <i>B. Miller, R. Lee, D. Hahn, G. Brown, A. Zahler</i>	343

33.	Submicron Write Track Fabrication Using RIE and KrF Excimer Laser Stepper <i>T. Okada, N. Yoshida, K. Etoh, I. Nunokawa, M. Fuyama, T. Kawabe</i>	348
34.	Composition and Plating Rate Variations in Narrow Pole Tips for Write Heads <i>T. Dinan, J.A. Katine, P. Rice</i>	359
35.	Micromagnetic Computer Simulation of Ultra-High Density Recording with the Use of a Planar-Type Head <i>S.H. Lim, H. Takano, K. Yoshida</i>	366
36.	The Use of CMP in Making Computer Read/Write Heads <i>P.B. Phipps, F.H. Dill, F.O. Eschbach, E. Lee, F. Martin</i>	381
37.	Temperature Distribution and Its Impact on Reliability of MR/GMR Heads <i>C.T. Lin, S. Kao, J.-W. Chang</i>	389
38.	Structural Properties and Electrical Resistivity of Sputter-Deposited Co-Sm-Co Trilayers <i>K. Tanahashi, M. Kawahara, N. Taguchi, T. Sugimoto, K. Motoi</i>	396
39.	High Frequency Measurements of Magnetic Films <i>D. Olsen, P. Koonath, T. Yeh, Z. Qian, D. Wang, R.F. Drayton, J. Sivertsen, A. Gopinath</i>	404
40.	Design and Characteristics of a Wafer-Scale Uniform Injection Cell for Thin Film Electroplating <i>H. Ortiz-Ibarra, J.A. Medina</i>	410
41.	Electrochemical Deposition of Nanocomposite Soft Magnetic Materials <i>I. Shao, P.M. Vereecken, P.C. Searson, C.L. Chien, R.C. Cammarata</i>	420
42.	Electrochemical Deposition of Bi on GaAs <i>P.M. Vereecken, P.C. Searson</i>	431
Section VI Magnetic MEMS		441
43.	Hybrid Technologies for Micromachined Magnetic Devices <i>M.A.M. Gijs, F. Amalou, M. Saidani, E. Bornand</i>	443
44.	Integrated Ferromagnetic Microsensors and Microactuators <i>J.W. Judy, H. Yang, N.V. Myung, C.-K. Yang, M. Schwartz, K. Nobe</i>	456
45.	A Magnetic Flexible Membrane Actuator for Micro Fluid Pumping <i>C. Liu</i>	469

46. Latching Micro Magnetic Relays <i>M. Ruan, J. Shen, C.B. Wheeler</i>	485
47. Electroplated Co-Ni-Mn-P-Based Hard Magnetic Arrays and Their Applications to Microactuators <i>H.J. Cho, C.H. Ahn</i>	495
48. Electrodeposited Hard Magnetic Thin Films for MEMS Applications <i>N.V. Myung, D.Y. Park, M. Schwartz, K. Nobe, H. Yang, C.-K. Yang, J.W. Judy</i>	506
49. Effects of Annealing on the Residual Stress and Bending in Sputtered Thin Films of Giant Magnetostrictive Alloys <i>S.M. Na, S.J. Suh, J.M. Jung, H.J. Kim, S.H. Lim</i>	521
50. Applications of Integrated Micromagnetic Devices at High Frequencies <i>M. Yamaguchi, K.I. Arai</i>	536
51. AC and DC Current Dependence of On-Chip Inductors <i>E. Wesseling, E. Brandon, U. Lieneweg, R. Rub, S. Gupta, T.C. Nam, C.H. Ahn</i>	547
52. Microinductors for Spacecraft Power Electronics <i>E. Brandon, E. Wesseling, V. White, U. Lieneweg, H. Cherry, J. Podosek, A. Hernandez-Pellerano</i>	559
53. Fully Integrated Magnetic Components for Wireless Communications <i>J.Y. Park</i>	568
54. Post-CMOS Integrated Planar Inductors for Monolithic Power Management Chips <i>T.M. Liakopoulos, R.W. Filas, A. Lotfi</i>	580
55. Magneto-Impedance and Domain Structure of Micropatterned Amorphous Magnetic Ribbons <i>F. Amalou, X. Houriet, E.L. Bornand, M.A.M. Gijs</i>	592
56. Electrical Energy Monitoring Via Silicon Hall Effect Devices <i>S.K. Gamage, H.T. Henderson</i>	600
Section VII	
Author Index and Key Word Index	611
Author Index	613
Key Word Index	615