Preliminary Program

L10 Ordered Intermetallic and Related Phases for Permanent Magnet and Recording Applications

Copper Mountain Resort and Conference Center
Copper Mountain, Colorado

August 15-20, 2004

Conference Co-Chairs

Michael McHenry
Carnegie Mellon University

William A. Soffa
Department of Materials Science and Engineering
University of Pittsburgh

ECI

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Sunday, August 15, 2004

16:00 – 18:00	Registration
18:00 – 19:00	Opening Reception
19:00 – 21:00	Dinner

Monday, August 16, 2004

07:30 – 08:30	Breakfast Buffet
08:30 – 08:45	Welcome and Opening Remarks Michael McHenry, Conference Chair Norm Stoloff, Conference Liaison
08:45 -	**Session I: Metallurgy and Phase Formation I** Session Chair: William Soffa, University of Pittsburgh
09:00 – 09:45	**ALLOYS, THIN FILMS AND NANOPARTICLES** *(invited)* Timothy Klemmer, Seagate Research
09:45 – 10:30	**THE CRYSTALLOGRAPHY, PHASE TRANSFORMATIONS AND MICROSTRUCTURE OF L10 MAGNETIC MATERIALS** *(invited)* David E. Laughlin, Carnegie Mellon University
10:30 – 11:00	Coffee Break
11:00	**Session II: Metallurgy and Phase Formation II** Session Chair: Kazuhiro Hono, National Institute for Materials Science
11:00 – 11:45	**TRANSFORMATION BEHAVIOR IN Fe-Pd AND Mn-Al-(C) L1O-TYPE MAGNETIC ALLOYS** *(invited)* William Soffa, Department of Materials Science and Engineering, University of Pittsburgh
11:45 – 12:30	**STRUCTURE AND METALLURGY OF MAGNETIC ALLOY NANOPARTICLES IN Fe-Pd SYSTEM** *(invited)* Yoshihiko Hirotsu, The Institute of Scientific and Industrial Research, Osaka University
12:30 – 13:30	Lunch Buffet
13:30 – 16:00	*Ad hoc* sessions/free time
16:00	Afternoon Coffee Service

Monday, August 16, 2004 (continued)

16:00	**Session III: Metallurgy and Phase Formation III** Session Chair: Yoshihiko Hirotsu Osaka University
16:00 – 16:45	**MICROSTRUCTURE AND PROPERTIES OF VARIOUS FORMS OF FePt HARD MAGNETIC ALLOYS** *(invited)* Kazuhiro Hono, National Institute for Materials Science
16:45 – 17:30	**EXPERIMENTAL ANALYSIS OF THE STRUCTURAL AND MAGNETIC PROPERTIES OF FePt FOILS PREPARED BY COLD-DEFORMATION** *(invited)* N.M. Dempsey, Laboratoire Louis Neel, CNRS
17:30 – 18:00	**EFFECT OF METAL ADDITIVES ON L10 ORDERING OF CHEMICALLY SYNTHESIZED FePt NANOPARTICLES** *(invited)* J.W. Harrell, University of Alabama
18:00 – 18:30	Stretch Break
18:30	**Session IV: Metallurgy and Phase Formation IV** Session Chair: David Laughlin, Carnegie Mellon University
18:30 – 19:00	**CALORIMETRIC STUDIES OF THE A1 TO L10 TRANSFORMATION IN BINARY FePt AND TERNARY FeCuPt THIN FILMS** Katayun Barmak, Data Storage Systems Center, Carnegie Mellon University
19:00 – 19:30	**THE EFFECT OF CHEMICAL ORDER AND PHASE TRANSFORMATIONS ON INTRINSIC AND EXTRINSIC MAGNETIC PROPERTIES OF Fe100-xPtx POWDERS** J. Lyubina, IFW Dresden, Institute for Metallic Materials
19:45 – 21:15	Dinner
21:15 – 22:15	Social Hour

Tuesday, August 17, 2004

07:30 – 08:30	Breakfast Buffet
08:30	**Session V: Magnetic Recording I** Session Chair: David Sellmyer, University of Nebraska
08:30 – 09:15	**MAGNETIC ANISOTROPY OF (FeCoNi)Pt L10 ALLOY THIN FILMS AND APPLICATION FOR PERPENDICULAR MAGNETIC RECORDING MEDIA** *(invited)* Takao Suzuki, Toyota Technological Institute
09:15 – 10:00	**NANO SCALE AND ATOMIC SCALE LAYER ENGINEERING OF L10 PHASE FePt FILMS FOR EXTREMELY HIGH AREAL DENSITY (EHDR) MAGNETIC RECORDING** *(invited)* Jian-Ping Wang, University of Minnesota
10:00 – 10:30	Coffee Break
10:30	**Session VI: Magnetic Recording II** Session Chair: Takao Suzuki, Toyota Technological Institute
10:30 – 11:15	**MEDIA DESIGN OF L10-FePt BASED THIN FILMS FOR ULTRA-HIGH DENSITY PERPENDICULAR MAGNETIC RECORDING** *(invited)* Toshio Suzuki, AIT(Akita Research Institute of Advanced Technology)
11:15 – 11:30	**A PtCo NANO-PARTICULATE MEDIA FOR HEAT ASSISTED PERPENDICULAR MAGNETIC RECORDING** Dave Newman, School of Engineering, Computer Science & Mathematics (University of Exeter)
11:30 – 12:00	Discussion
12:00 – 13:30	Lunch Buffet
13:30 – 15:45	*Ad hoc* sessions/free time
15:45	Afternoon Coffee Service
16:00	**Session VII: First-Principle Calculations I** Session Chair: Thomas Schulthess, Oak Ridge National Laboratory
16:00 – 16:45	**FIRST PRINCIPLES CALCULATIONS OF FEPT AND CoPt L10 ALLOYS** *(invited)* James M. MacLaren, Tulane University
16:45 – 17:30	**ANISOTROPY OF EXCHANGE COUPLING AND CURIE TEMPERATURE IN FePt** *(invited)* R. Sabirianov, University of Nebraska Omaha

Tuesday, August 17, 2004 (continued)

17:30 – 18:15	**EFFECT OF MAGNETIC INTERACTIONS MEDIATED BY 5d/4d (Pt, Pd, Rh) ATOMS ON FINITE TEMPERATURE MAGNETISM OF FeM, M=(Pt, Pd, Rh) INTERMETALLICS** *(invited)* Oleg N. Mryasov, Seagate Research
18:15 – 18:30	Stretch Break
18:30	**Session VIII: First-Principle Calculations II** Session Chair: James MacLaren, Tulane University
18:30 -19:15	**MAGNETISM IN FePt FROM AN ATOMISTIC POINT OF VIEW** *(invited)* Thomas Schulthess, Oak Ridge National Laboratory
19:15 – 20:00	**MAGNETISM IN L10 COMPOUNDS FROM FIRST PRINCIPLES** *(invited)* A. Kashyap, Central Computer Center, India
20:00 – 21:30	Dinner
21:30 – 22:30	Social Hour

Wednesday, August 18, 2004

07:30 – 08:30	Breakfast Buffet
08:30 –	**Session IX: L10 Nanostructures I** Session Chair: Yutaka Shimada
08:30 – 09:15	**MAGNETISM OF HIGH-ANISOTROPY L10 NANOSTRUCTURES** *(invited)* David Sellmyer, Center for Materials Research, University of Nebraska
09:15 – 10:00	**NANOSTRUCTURE AND HIGH COERCIVITY IN SPUTTERED FePt THIN FILMS** *(invited)* Koki Takanashi, Institute for Materials Research, Tohoku University
10:00 – 10:30	Coffee Break
10:30	**Session X: L10 Nanostructures II** Session Chair: Toshio Suzuki, Akita Research Institute of Advanced Technology
10:30 – 11:15	**MAGNETIC PROPERTIES AND CRYSTAL STRUCTURES OF SELF-ASSEMBLED NANOPARTICLE MEDIA** *(invited)* Hiroyoshi Kodama, Fujitsu Laboratories LTD.
11:15 – 11:45	**L10 NANOSTRUCTURES PRODUCED BY CHEMICAL REACTIONS IN POROUS ALUMINA** Yucheng Sui, University of Nebraska
11:45 – 12:00	Discussion
12:00 – 13:30	Lunch
13:30 – 15:45	*Ad hoc* sessions, free time
16:45	Afternoon Coffee Service
16:00	**Session XI: Micromagnetic and Atomistic Models of Switching** Session Chair: Nora Dempsey
16:00 – 16:45	**MICROMAGNETICS OF FEPT STRUCTURE: A TUTORIAL APPROACH** *(invited)* Thomas Schrefl, Vienna University of Technology
16:45 – 17:30	**AN ATOMISTIC MODEL OF SWITCHING IN FePt NANOPARTICLES** (invited) Roy Chantrell, Seagate Research
17:30 – 18:00	**ATOMIC AND NANOSCALE EXCITATIONS IN L10 MAGNETS** Ralph Skomski, Department of Physics and Astronomy and Center for Materials Research and Analysis, University of Nebraska

Wednesday, August 18, 2004

19:30 **Session XII: Poster Session**
Session Chair: Timothy Klemmer, Seagate Pittsburgh and Koki Takanashi, Institute for Materials Research, Tohoku University

19:30 – 21:00 Dinner

21:00 – 22:00 Social Hour (in poster area)

Thursday, August 19, 2004

07:30 – 08:30 Breakfast Buffet

08:30 – **Session XIII: Reversal Processes and Measurement**
Session Chair: Roy Chantrell, Seagate Research

08:30 – 09:15 **MAGNETIZATION REVERSAL PROCESS IN FePt L10 NANOPARTICLES**
(invited)
Satoshi Okamoto, Institute of Multidisciplinary Research for Advanced Materials, Tohoku University

09:15 – 10:00 **FORC STUDIES OF MAGNETIZATION REVERSAL IN CO/PT AND EXCHANGE SPRING MAGNET FILMS**
(invited)
Kai Liu, University of California - Davis

10:00 – 10:30 Coffee Break

10:30 0 11:15 **Session XIV: Reversal Processes**
Session Chair: Ralph Skomski, University of Nebraska

11:15 – 11:45 **EFFECT OF INTERLAYER EXCHANGE INTERACTION ON THE MAGNETIZATION REVERSAL IN FEPT/FERH BILAYER FILMS**
T. Goto, Faculty of Engineering, Tohoku Gakuin University

11:45 – 12:15 **NUCLEATION-TYPE MAGNETIZATION BEHAVIOR IN EPITAXIALLY GROWN FePt ISLAND-LIKE FILMS**
Toshiyuki Shima, Institute for Materials Research, Tohoku University

12:15 – 13:30 Lunch

13:30 – 16:00 *Ad hoc* sessions/free time

Thursday, August 19, 2004 (continued)

16:00 Afternoon Coffee Service

16:00 **Session XV: Multiscale Modelling**
Session Chair: Thomas Schrefl, University of Vienna

16:00 – 16:45 **ATOMISTIC, MICROSTRUCTURAL AND MICROMAGNETIC ASPECTS OF MULTISCALE MODELING OF HYSTERETIC PHENOMENA IN HARD MAGNETS** *(invited)*
Vladimir Antropov, Ames Laboratory

16:45 – 17:15 **SIMULATION AND EXPERIMENTAL STUDY OF MICROSTRUCTURE AND MAGNETODYNAMICS OF L10 FERROMAGNETS**
Yunzhi Wang, The Ohio State University

17:15 – 17:30 Stretch Break

17:30 **S** **Session XVI: L10 Textured Development**
Session Chair: George Hadjipaynias, University of Deleware

17:30 – 18:15 **ELECTRODEPOSITION OF FEPT FILMS AND THE DEVELOPMENT OF TEXTURE USING Cu (001) SUBSTRATES AND A COMPARISON TO SPUTTERED FePt ON MgO (001)** *(invited)*
Erik B. Svedberg, Seagate Technology

18:15 – 18:45 **INFLUENCE OF FCC CRYSTALLOGRAPHIC TEXTURE ON THE DISORDERED FCC --> ORDERED L10 PHASE TRANSFORMATION IN SPUTTERED NI50MN50 FILMS DURING LOW TEMPERATURE ANNEALING**
F. E. Spada, Center for Magnetic Recording Research, University of California, San Diego

18:45 – 19:15 Social Hour

19:15 – 21:15 Conference Banquet

Friday, August 20, 2004

07:30 – 08:30	Breakfast Buffet
08:30 –	**Session XVII: L10 Nanostructures III** Session Chair: Katyun Barmak, Carnegie Mellon University
08:30 – 09:15	**INVESTIGATION OF PARTICLE FORMATION AND SUPERSTRUCTURE DEVELOPMENT IN FePt NANOPARTICLES AND THEIR EFFECT ON MAGNETIC PROPERTIES** *(invited)* George C. Hadjipanayis, Department of Physics and Astronomy, University of Delaware
09:15 – 10:00	**THE EFFECT OF THE INTERFACE ON THE ORDERING OF FePt NANOSIZED PARTICLES** Y.K. Takahashi, National Institute for Materials Science
10:00 – 10:30	Coffee Break
10:30	**Session XVIII: L10 Nanostructures IV** Session Chair: Michael McHenry, University of Pittsburgh
10:30 – 11:00	**FePt NANOCLUSTER-ASSEMBLED STRUCTURES** Jian-Ping Wang, MINT & ECE Dept., University of Minnesota
11:00 – 11:30	**SYNTHESIS AND CHARACTERIZATION OF FE(NIPT) NANOPARTICULATE SYSTEMS** Yunhe Huang, University of Delaware
11:30 – 12:00	Discussion
12:00 – 13:30	Lunch and Conference Adjournment

Afternoon Excursion by arrangement

POSTER PRESENTATIONS

1. **THEORETICAL INVESTIGATIONS OF CHANGES IN MAGNETIC PROPERTIES DUE TO VARIATION ABOUT THE 50/50 STOICHIOMETRY IN L10 ALLOYS OF FePt AND CoPt**
   Shannon D. Willoughby, Colorado School of Mines

2. **MELTING AND ORDER-DISORDER TRANSFORMATION TEMPERATURES OF MELT-SPUN (FE0.55PT0.45)-ZR-B NANOCRYSTALLINE ALLOYS**
   Teruo Bitoh, Department of Machine Intelligence and Systems Engineering, Faculty of Systems Science and Technology, Akita Prefectural University

3. **EFFECTS OF ANNEALING ATMOSPHERE ON THE TRANSFORMATION TEMPERATURE AND MAGNETIC PROPERTIES OF FEPT AND COPT NANOPARTICLES BY CHEMICAL SYNTHESIS**
   Hongli Wang, University of Delaware

4. **MAGNETIC AND STRUCTURAL PROPERTIES OF MNAL/AG GRANULAR THIN FILMS WITH L10 PHASE**
   Z. C. Yan, Universtiy of Delaware

5. **FABRICATION OF FEPT/AG NANOPARTICULATE THIN FILMS WITH PERPENDICULAR MAGNETIC ANISOTROPY**
   J. Wan, University of Delaware

6. **EFFECT OF ELEVATING RATE OF TEMPERATURE IN THERMAL ANNEALINGS ON CRYSTALLOGRAPHIC PHASE TRANSFORMATION OF FEPT SPUTTERED FILMS**
   Kazuhiro Nishimura, Toyohashi University of Technology

7. **TEMPERATURE DRIVEN CHANGES OF ORDER AND MAGNETISM IN FEPD THIN FILM AND THIN OIL**
   Ch. Issro, W. Püschl, W. Pfeiler, Institut für Materialphysik, University of Vienna

8. **MEASUREMENT AND MODELING OF ORDERING KINETICS IN FEPD**
   T. Mehaddene, Technical University of Munich

9. **GROWTH OF FEPT/COPT3/FERH TRILAYERS WITH (001)-TEXTURE ON SiO_2**
   T.Goto, Faculty of Engineering, Tohoku Gakuin University

10. **MORPHOLOGICAL CHANGES IN IRON-PLATINUM NANOGRANULAR THIN FILMS SUBJECTED TO ION-IRRADIATION**
    Syo Matsumura, Kyushu University

11. **DETERMINATION OF LONG-RANGE ORDER PARAMETERS OF L10-FEPT AND FEPD NANOPARTICLES BY ELECTRON DIFFRACTION**
    Kazuhisa Sato, The Institute of Scientific and Industrial Research, Osaka University

12. **THE A1-L10 PHASE TRANSITION IN THE ALLOY NANOPARTICLE**
    Bo Yang, Department of Materials Science and Engineering ,Northwestern University

13. **EFFECT OF AG UNDERLAYER ON PROPERTIES OF FEPT FILMS SPUTTERED ON POLYIMIDE**
L.T.Nguyen, System & Materials for Information Storage Group

14. **EFFECT OF SB ADDITION IN THE ORDERING PROCESS OF FEPT THIN FILM**
Chan-Gyu Lee, Changwon, National University, Department of Metallurgy and Materials Science

15. **PATTERNED L10 NANOSTRUCTURES WITH PERPENDICULAR ANISOTROPY**
Maria Daniil, University of Nebraska

16. **MAGNETIZATION REVERSAL IN PARTICULATE L10 MAGNETS**
Jian Zhou, Ralph Skomski, and David J. Sellmyer, University of Nebraska

17. **NONEPITAXIALLY GROWN (001) TEXTURED FEPT :X(=C, AG, B2O3...) FILMS**
M. L. Yan, N. Powers, and D. J. Sellmyer, University of Nebraska

18. **FEPT NANOPARTICLES FOR DATA STORA GE**
Mihaela Tanase, David E. Laughlin, Carnegie Mellon Univ.

19. **ELECTRODEPOSITED L10 ALLOYS OF PT WITH FE, CO AND NI**
J.J.Mallett, E.B. Svedberg*, W.F. Egelhoff, Jr. and T.P. Moffat, National Institute of Standards and Technology and *Seagate Technology

20. **TBD**
Andreas Kulovits, University of Pittsburgh