



IEEE

MAGNETICS SOCIETY

NEWSLETTER

VOLUME 29, NO. 2

ISSN 1059-8340

April 1992

JODIE CHRISTNER, EDITOR

PRESIDENT'S COLUMN

Stanley H. Charap

This space affords me the opportunity to share with you some of the experience of being President of the Magnetism Society. To begin, I want to point out that the Society is benefiting from the work of a talented and dedicated group of volunteers and is a vital and a slowly, but steadily, growing organization.

The publication program of the Society is, along with our conferences, our major function. After years of excellent service, Carl Patton has stepped down as Editor-in-Chief and Chairman of our Publications Department. Bill Lord has moved up from Reviews Editor to take his place. Our publications roster now includes, in addition to Bill, Bob Johnson and David Giles as Reviews Editors, Martin Parker as Advances in Magnetism Editor and Ron Goldfarb as Conference Editor. I should mention that Ron has been spearheading an effort to upgrade the quality of the conference papers that are ultimately accepted for publication in the Transactions. It takes a lot of work, but I believe that we will see great benefits from it.

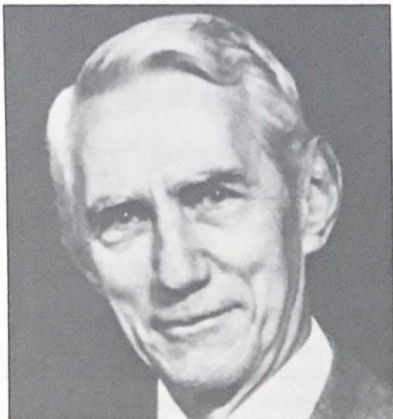
At the INTERMAG Conference the president presides over the AdCom meeting and presents at the plenary session. This year's AdCom meeting in St. Louis will be enlivened by a report from Craig Perlov, who preceded Jodie Christner as editor of this newsletter. I was not prepared to let Craig simply "retire" (perhaps a bit unfair, since he continues working for the INTERMAG Conferences) and asked him to take on the Technical Committees Department. I hoped that these committees would take on a more central role in the life of the Society, providing leadership in the organization of the programs of our conferences and resources for the reviewing of contributed papers for the Transactions. He accepted the job and at last report Craig has been scrutinizing the list of committees with a view to bringing the roster into better correspondence with activities in the field. Some committees may disappear and others may be combined or split. It will be up to the conference organizers, the Transactions editors and the committees to make the system work. I believe that the outlook is brighter now that Craig is working on it.

An important function of the Society is to recognize outstanding achievement. I'd like everyone to remember this and to do everything possible to get the Magnetism Society behind deserving candidates in our field. At this year's plenary session, there are three new Fellows of the

IEEE who have chosen to receive their certificates in the presence of the magnetism community. These new Fellows are A. F. Mayadas, who is recognized "for contributions to magnetic storage and thin film technology and systems," Juan A. Rodriguez, who is recognized "for technical leadership in the development of computer data storage devices," and Susumi Uchiyama, who is recognized "for contributions to research and development of magneto-optical recording." Then the Magnetism Society Achievement Award will be presented to Yoshifumi Sakurai, whose extensive contributions to applied magnetism are crowned by the development of magneto-optic thin film memory using amorphous rare earth-transition metal material. The Magnetism Society Information Storage Award will be presented to Claude E. Shannon, whose work gave birth to Information Theory. Finally, recipients of three IEEE Field awards have chosen to be recognized in the presence of the magnetism community. Merrill W. Buckley, Jr., President of the IEEE will come to the plenary session to present these awards on behalf of the IEEE Board of Directors: the IEEE Cleo Brunetti Award to David A. Thompson "for pioneering work in miniature magnetic devices for data storage, including the invention, design and development of thin-film and magnetoresistive recording heads," the IEEE Morris E. Leeds Award to Kumar Wickramasinghe "for contributions to electrical techniques for nanometer-scale measurements of magnetic optical, electrostatic and thermal properties of surfaces," and the IEEE Morris N. Liebmann Memorial Award to Praveen Chaudhari, Jerome J. Cuomo and Richard J. Gambino "for the discovery of amorphous magnetic films used in magneto-optic data storage systems."

Finally, I have a letter from Prof. M. A. Rozenblat, the President of the newly organized Magnetism Society of the former Soviet Union (CIS). Although based in Moscow, their intention is to serve all 15 republics. Their organization is to be modeled after ours, particularly with technical committees, conferences, symposia, etc. They have asked us to give them a subscription to our Transactions for a while, because it is beyond their present ability to pay for it; I will be asking the AdCom to consider that request. However, I will also ask the IEEE TAB to consider the relationship of IEEE to the technical societies of the CIS. This is an important question for the Institute, which considers itself an international organization. It is also timely, considering governmental discussions of the future of the scientific and technical community in the CIS.

SHANNON HONORED BY STORAGE AWARD



Claude E. Shannon

The 1992 Magnetics Society Storage Award has been given to Prof. Claude E. Shannon. Claude Shannon has had a long and distinguished career in the initiation and development of mathematical theories and techniques for diverse engineering applications in the fields of switching circuits, computers and communications. His most significant single piece of work is in the field of communications, first presented in his paper "A Mathematical Theory of Communication" which was published in 1947-1948 in the Bell System Technical Journal. This paper gave birth to Information Theory which is the framework behind our current theoretical understanding of communication.

Information theory provided for the first time a quantitative measure of the basic commodity of communication-messages, and among many other things it set straight forever the roles of bandwidth and noise in achieving or delimiting reliability and accuracy of information transmission. In particular, it showed that lack of reliability in a communication channel need not limit the reliability of information which is received over such a channel, but need limit only the rate at which information of arbitrarily great reliability can be received.

Shannon has greatly extended his theory in later publications, since the 1948 paper. He has dealt with such topics as the theory of cryptographic secrecy systems, multiterminal communications networks, communication systems involving feedback and communication in the presence of Gaussian noise.

Shannon's work has been of great interest to those concerned with human communications. Linguists and experimental psychologists dealing with human communications have found Shannon's definitions, his model of the communication process, and his theorems valuable and suggestive; and the use of his measure of information in experimental psychology is now widespread. Physicists also make use of these fundamental notions.

Prof. Shannon received his B.S. degree from the University of Michigan and his Ph.D. from M.I.T. He has also received more than a dozen honorary degrees from universities here and abroad. He was employed at Bell Telephone Laboratories from 1941 to 1956 when he moved to M.I.T. He is Professor Emeritus since 1978 and before that the Donner Professor of Science in the Department of Mathematics and Electrical Engineering. He is a Fellow of the National Academy of Science, National Academy of Engineering, the American Philosophical Society, the Royal Society of London and the IEEE. Among many honors, he received the Medal of Honor from the IEEE in 1966, the National Medal of Science in 1966, the Kyoto Prize in 1985 and the Edouard Rhein Prize in 1991.

INFORMATION STORAGE AWARD ELEVATED TO IEEE FIELD AWARD

The IEEE has approved the elevation of the IEEE Magnetic Society Information Storage Award to an IEEE Field Award. This will give the award considerably greater visibility and prestige. Nominations are required immediately to insure that an appropriate nominee is selected by August, 1992. Previous winners of the Magnetics Society Storage Award (Sidney M. Rubens, Jay W. Forrester, Reynold B. Johnson, Marvin Camras, Charles Coleman and Claude Shannon) are eligible for the Field Award. A new selection committee from several Societies is being formed. Please send nominations to:

Dr. William Doyle
The University of Alabama
P.O. Box 870209
Tuscaloosa, AL 35487-0209

IEEE Magnetics Society Newsletter is published quarterly by the Magnetics Society of The Institute of Electrical and Electronics Engineers, Inc. Headquarters of the IEEE is 345 East 47th Street, New York, NY 10017-2394. \$1.00 per member per year (included in Society fee) for each member of the Magnetic Society. Printed in USA. Second-class postage paid at New York, NY and at additional mailing offices. **Postmaster:** Send address changes to IEEE Magnetics Society Newsletter, IEEE, 445 Hoes Lane, Piscataway, NJ 08854-4150.

The objective of the **IEEE Magnetics Society Newsletter** is to publicize activities, conferences, workshops and other information of interest to the Society membership and technical people in the general area of applied magnetics. Copy is solicited from the Magnetics Society membership, organizers of conferences, officers of the Society and local chapters and other individuals with relevant material. Send copy to Dr. Jodie A. Christner, Dept. 2H2, IBM Corporation, 3605 Hwy 52 North, Rochester, MN 55901-7829, Telephone: (507) 253-5513 FAX: (507) 253-4146.

CANDIDATES NAMED FOR DIVISION IV DIRECTOR

Two candidates have been selected for next term of the IEEE Division IV Director. The nominees are:

Clark E. Johnson, Jr.
Magnetics Society
Suite 509
700 Douglas Avenue
Minneapolis, MN 55403

W. Kenneth Dawson
Nuclear and Plasma Sciences Society
Division Head, Electronics and Computing
TRIUMF
Vancouver, BC, Canada

Their names will be on the general IEEE ballot that all members will receive this summer. This information is provided so that you may better exercise your power to vote. The candidates vitae and position statements follow:

CLARK E. JOHNSON, JR.

Clark E. Johnson, Jr., received his BS (Physics, 1950) and MS (EE, 1961) from the University of Minnesota. He is a Fellow of the IEEE, and has held many offices, including President, of the IEEE Magnetics Society. He also has been Chairman of the Conference Executive Committee and served in numerous capacities with other professional associations. His professional career started in magnetic recording at the 3M Company, followed by a number of positions as Director, Vice President, President, and Founder of technology-based companies. He spent 1988 in Washington, DC, as an IEEE Engineering Fellow, working for the ranking congressional member of the Science and Technology Committee. He holds 19 patents, and is the author of more than thirty technical papers. He is presently President of Rastech Corporation and of the Card Systems Testing Laboratory.

Position Statement

The cold war is over; the U.S. is now engaged in the greatest struggle of its existence — an economic war with implications that will determine our future as a nation. We must regain and retain our technological leadership, and to do so will require a concerted effort from the engineering community. It is mandatory that the IEEE inspire and motivate its members to lead this revolution. As a Director, one of my major responsibilities will be to encourage and enable our membership to actively participate in the political process. Our technological leadership as a nation and gainful employment for our members depends on our political success. Nothing else will matter if we drift into 3rd world status.

W. KENNETH DAWSON

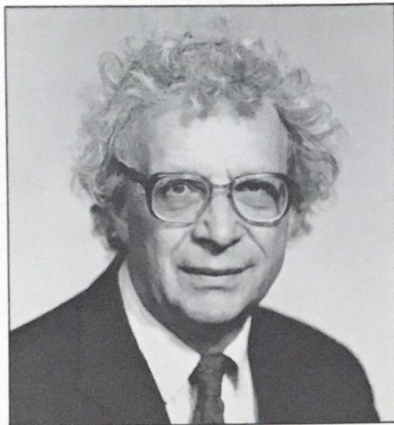
Dr. Dawson received a BScA in applied physics from Laval University in 1951 followed by an MA and PhD in Nuclear Physics from Queen's University. In 1955 he joined the Defense Research Board (Canada) as a research Scientist. Four years later he moved to the Physics Department at the University of Alberta where he is a Professor of Physics. Since 1982 he has been stationed at TRIUMF where he serves as a Division Head and Special Advisor to the Director. Before going to TRIUMF he spent two years at Los Alamos, the second of which was as a group leader. His technical and scientific responsibilities at TRIUMF lie in the areas of electronics, computing and controls for medium and large scale physics applications. He has authored or coauthored over 50 papers and has actively participated in the preparation of nine IEEE/ANSI standards. Dr. Dawson has been awarded a Standards Medalion and is a Fellow of the IEEE. Within the Nuclear and Plasma Sciences Society his duties have included Administrative Committee Member, Secretary and President. At present he is Editor-in-Chief for the Society. He is also a member of the Association for Computing Machinery and the American Association of Physics Teachers.

Position Statement

There are many reasons to believe that the next few years will be very important ones for the long-term future of the IEEE. A change in general manager is slated to take place, there are financial difficulties, there are strong winds in the transnational direction at a time when national concerns are increasing and new technologies seem to emerge on an almost daily basis. Where there are problems there are also opportunities. The IEEE has problems. With clear vision and good leadership we can turn the problems into opportunities and then into realities. I would be honored to have the privilege of working with you to make a better, more responsive IEEE.

REPORT OF THE DIVISION IV DIRECTOR

By Martin V. Schneider



Martin V. Schneider

At the end of every year, each IEEE Division Director prepares a summary report highlighting the activities of the Societies in the Division. In Section I report, which is based on inputs from each Society President, I have added a preface listing activities of common interest to members in our Division. The document shows that the Societies in Division IV continue to be leaders in expanding existing services and starting new projects.

I. 1991 Annual Report of Division IV - Electromagnetic and Radiation

Division IV is composed of five technical Societies: Antennas and Propagation (AP), Electromagnetic Compatibility (EMC), Magnetics (MAG), Microwave Theory and Techniques (MTT) and the Nuclear and Plasma Sciences (NPS). An additional member of our electromagnetic team is the Superconductivity Committee (SCC). Two additional Societies are joining Division IV in January 1992: Broadcast Technology (BT) and Consumer Electronics (CE).

The year 1991 in Division IV was characterized by efforts to enhance communications between the Societies and encourage their transnational activities. For example:

1. New chapters were formed at an increasing rate by the Societies in Regions 8, 9 and 10. In addition, members of Regions 8 and 10 were elected to the Administrative Committees of two Societies.
2. Vice Presidents in each Society were encouraged to attend the ADCOM meeting of another Society to establish contacts and learn from the experiences of other groups.
3. Six videotapes on electromagnetic topics featuring distinguished IEEE lecturers were produced. The program has been adopted by LEOS in Division I and has generated interest in other Divisions.
4. A new series of articles, "Classic Papers Revisited", was created. The purpose of this series is to rewrite fundamental classical papers, written several decades ago, for a modern audience.
5. A Division IV speakers' catalog was prepared for the IEEE Colloquium 1992 in Region 8. The proposed list includes four Society Presidents in Divi-

sion IV, and the timely topic *Telecommunications Manufacturing in Newly Industrializing Countries*.

6. IEEE Press Books on electromagnetic subjects became very popular. The best seller was R. Collin's original book, *Field Theory of Guided Waves*; 2,400 copies were sold in 1991. Also in great demand were new EM titles such as *Computational Electromagnetics* by E. Miller, L. Medgyesi-Mitschang and E. Newman, and a monograph by Chen-To Tai entitled *Generalized Vector and Dyadic Analysis*.

The specific activities and accomplishments of the individual Societies and the Superconductivity Committee were as follows:

AP

Under the leadership of Helmut E. Schrank, President of the Antennas and Propagation Society, a project to advance the understanding of electromagnetic field concepts through computer-generated educational aids reached an important milestone. Magdy Iskander produced the first CAEME (Computer Applications for Electromagnetic Education) software books, which include eight discs of applicable software. The AP Magazine, in its second year, has grown into a highly respectable and successful IEEE publication as evidenced by the feedback from readers and by the worldwide participation of authors.

EMC

The Electromagnetic Compatibility Society, headed by President Edward L. Bronaugh, established new chapters in the United Kingdom and Germany, finalized the agreement with the French SEE to start a chapter in France, and is in the process of forming a joint Society with EMC-IREE in Australia. The EMC Society created an archive of all the Symposia, Newsletters and other relevant technical and historical information. Progress was also made in updating existing standards and the publication of a new, important standard, No. 299-1991, entitled *IEEE Standard for Measuring the Effectiveness of EM Shielding Enclosures*.

MAG

The Magnetics Society, under President Stanley H. Charap, began the publication of *Advances in Magnetics* which appeared in a special issue of the Transactions on Magnetics and will be printed on a yearly basis. An update of the directory *University Programs in Magnetics* was completed and distributed at the Joint INTERMAG-MMM Conference. A revision and expansion of the directory is scheduled for 1992. Plans are underway to resume the Society's Equipment Grant Program for university and advanced undergraduate teaching.

MTT

The Microwave Theory and Techniques Society, presided by Ferdo Ivanek hosted the 50th anniversary celebration of the MTT Radiation Laboratory in Boston, Massachusetts. The festivities were held in conjunction with the 1991 International Microwave Symposium. The ADCOM, which had two members from Region 8, became more transnational by electing a member from Region 10. The MTT-S Technical Committees, the Society's backbone, have sharpened their focus on emerging technologies and are holding an annual workshop on new technology directions.

NPS

The Nuclear and Plasma Sciences Society, under President Harold L. Flescher, continued its activities in a large number of technical disciplines: Computer Applications in NPS, Environmental Instrumentation, Fusion Technology, Nuclear Instruments and Detectors, Nuclear Medical Sciences, Particle Accelerators, Plasma Sciences, Radiation Effects, and Reactor Instrumentation and Controls. On the transnational scene it held its first conference outside the USA in Aachen, Germany. The topic was: Real Time Computer Applications in Nuclear, Particle and Plasma Physics. The Society was also an active participant in the RADECS meeting, the first European Radiation Effects Conference held in Grande Motte, France.

SCC

The Superconductivity Committee, chaired by Alan F. Clark, started publication of the *IEEE Transactions on Applied Superconductivity* in March 1991. The first issue carried articles on Josephson junctions applicable to digital and logic circuits, and high-T_c films. The editors, Theodore van Duzer and Clark A. Hamilton, invite submissions on power applications including energy storage and magnetic levitation, superconductive motors and generators, power transmission, microwave devices, and logic and memory circuits. The SCC committee includes representatives from ten technical IEEE Societies.

II. 1992 Goals for the Technical Activities Board

As in previous years, the IEEE Technical Activities Board (TAB) prepares a list of goals which will improve the technical services and quality of the products provided to our members. A total of 26 goals were formulated at the beginning of the year based on the inputs of Society Presidents, Council Chairs and Division Directors. Each item in this ambitious program has specific milestones with corresponding due dates, and designated teams which are responsible for meeting a particular goal.

A few specific examples are:

1. Facilitating the availability of new technical articles by offering preprints of papers to our members. This measure would reduce the waiting time for receiving a crucial paper by several months to up to half a year.
2. Developing a clear and informative format for presentation of financial data to Societies, including the charges for services rendered. In addition, improving TAB's financial situation by both cost and containment and revenue enhancement and preserving the financial integrity of individual societies.
3. Creating videotapes and expanding the live satellite video conference program by inviting Society Distinguished Lecturers as speakers and participants.
4. Establishing incentives for attracting new Society members and retaining current members through enhancing services and adding value to existing programs. An example would be the publication of

"Engineering Application Notes" similar to design papers published by large electronic companies.

These and many other goals will be discussed at the Society President's Forum in April 1992, adopted after appropriate modifications by TAB, and implemented by designated committees and task forces.

III. Highlights of the February 1992 IEEE Board Meeting

The IEEE Board of Directors met in Vancouver, British Columbia from February 14-16, 1992. The new faces heading the Board are President Merrill Buckley and President-Elect Martha Sloan. The highlights of the Board meeting were as follows:

- The IEEE General Fund anticipated deficit of 500K in 1991 has been essentially eliminated.
- Endorsement was given to permit the election of a Division Director-Elect.
- The 1992 Strategic and Operational Plans of major IEEE Boards (Publications, Standards, Education, Awards, Technical Activities and Regional Activities) were discussed and approved.
- An IEEE Service Center Office will be opened in Singapore in 1993.

The appointment of a Division Director-Elect would benefit our Division because two officers, one belonging to a large Society and the other to a small Society could then work jointly on issues that require action by the Board. The establishment of the Singapore service center will enhance our visibility in the Far East and can serve as a focal point for attracting new members and forming Chapters of the Magnetics Society.

IV. Emerging Technologies

Since the beginning of this year, I have been chairing the TAB New Technology Directions Committee whose mission is to forecast the future of various technologies and spearhead the investigation of the emerging fields. I contacted our Society President, Stanley Charap, to discuss how the Magnetics Society can make an impact and gain more visibility by informing IEEE members and Societies about emerging technologies in our field of interest. As a first step, we proposed to create a one-page executive summary describing emerging technologies in the MAG field. Roger Hoyt has already completed an excellent document which appeared on the front page of the last IEEE Magnetics Society Newsletter. By adding similar summaries from other societies we will be able to create a portfolio and data base of emerging technologies. Stanley and I are also encouraging the publication and dissemination of emerging technology newsbriefs through society newsletters, magazines and the *IEEE Spectrum*. If you wish to participate in this team effort or have any suggestions on how to fulfill our mission please send us your thoughts by FAX, e-mail or just POTS (Plain Old Telephone Service).

CALL FOR PAPERS

1993 International Magnetism Conference

INTERMAG '93 will take place from Tuesday, April 13 through Friday, April 16, 1993 at the Folkets Hus, Stockholm, Sweden.

The purpose of the International Magnetism Conference is to provide a forum for presentation of new developments in applied magnetism, related magnetic phenomena, and information storage techniques.

In addition to contributed papers, there will be invited papers, sessions wherein competing technologies can be assessed, tutorial sessions and workshops for less formal discussions of timely and/or controversial topics. Special emphasis will be placed on applications-oriented topics in the above, as well as in the contributed papers.

Contributed papers are solicited in all areas of applied magnetism, related magnetic phenomena, and information storage technologies. Topics of wide interest in recent years have included all aspects of magnetic recording, various magnetic memory technologies, magnetic multilayers, microwave magnetism, transformers, permanent magnet materials and technologies, control and power, conversion and conditioning, magnetometry and transducers, magnetic gradient separation, magnetic field calculations, and magnetic materials properties and processing. This list is intended to be suggestive rather than restrictive.

Digests must be received by 1 November, 1992 and should be sent to:

INTERMAG '93
% Congrex (USA), Inc.
7315 Wisconsin Avenue, Suite 606W
Bethesda, MD 20814 USA

The digest is not an abstract, it is a two page condensation or summary which outlines the work to be reported and includes as many of the results as possible. The inclusion of figures, tables, and especially numerical results is strongly recommended.

Information on the preparation of the digest can be obtained from the Conference Publicity Chair,

Prof. John Nyenhuis
Purdue University
School of Electrical Engineering
West Lafayette, IN 47907 USA
Telephone: (317) 494-3524 (317) 494-6440 (FAX)
email: nyenhuis@ecn.purdue.edu

Conference information can also be obtained from the Conference Coordinator:

Mr. Chuck Thies
INTERMAG '93
% Congrex (USA), Inc.
7315 Wisconsin Avenue, Suite 606W
Bethesda, MD 20814 USA
Telephone: 301-469-3355 FAX: 301-469-3360

Details regarding hotel reservations and rates, as well as Conference registration fees will appear in the final call for papers.

1st INTERNATIONAL SYMPOSIUM ON BARIUM FERRITE AND ADVANCED MAGNETIC RECORDING

The 1st International Symposium on Barium Ferrite and Advanced Magnetic Recording (ISBF-92) will be held in Kalamata, Greece on September 7, 8, 9 and 10, 1992. The Symposium is a satellite to the MRM-92 Conference (International Conference on Magnetic Recording Media) planned to be held in Perugia, Italy, on September 2, 3 and 4, 1992.

The ISBF-92 will consist mainly of invited presentations, both tutorial and advanced. Contributed papers also welcomed and will be presented in post sessions. The Symposium will cover in depth all the important aspects of technology:

- ◆ **Particles:** Fabrication, properties, costs.
- ◆ **Media Fabrication:** Dispersion, orientation, coating (including double layers) for flexible and rigid media.
- ◆ **Media Performance:** High density response and comparisons with other particulates and thin films.
- ◆ **Fundamental Considerations:** Magnetization reversal, particle interactions, unique remanence characteristics, time effects.
- ◆ **Competitive Issues:** Cost-performance comparisons with MP, ME and thin film rigid disks, and future projections.

Submission of written manuscripts will be optional. More specific details on the Symposium, including invited topics and speakers, schedule, transportation arrangements, hotel accommodations, spouse programs, cultural/social activities and banquet, will be mailed in the near future to those expressing an interest to attend ISBF-92.

Please phone, fax, or write your intent and any suggestions and recommendations to:

ISBF-92

Dr. Dennis Speliotis
c/o Advanced Development Corporation
8 Ray Avenue
Burlington, MA 01803
Tel: (617) 229-8800
Fax: (616) 229-0112

CONFERENCE CALENDAR

JUNE 7-19, 1992

NATO-Advanced Study Institute on High Density Digital Recording.
Il Ciocco, Italy.

Prof. G. J. Long, Department of Chemistry, University of Missouri-Rolla, Rolla, MO 65401, USA. TEL: 314-341-4438, FAX: 314-341-6033, BITNET/EARN: C3126A at UMRVMA, or Prof. F. Grandjean, Institut de Physique, B5 Universite de Liege, B-4000 Sart Tilman, Belgium. TEL: 32-41-563632, FAX: 32-41-562355. BITNET/EARN: U2121FG at BLIULGI.

JULY 1-12, 1992

NATO-ASI Summer School in Applied Magnetism.
Erice, Sicily.

Dr. C. D. Wright, Scientific Secretary, Department of Electrical Engineering, The University of Manchester, Manchester M13 9PL, England.
TEL: +44 61 275 4550, FAX: +44 61 275 4512.

JULY 3-8, 1992

Second International Symposium on Physics of Magnetic Materials.
Beijing, China.

Prof. Yang LUO, San Huan R/D Center, Academia Sinica, PO Box 603, Beijing 100080, PR China, Telex: 222592 SHI CN, FAX: 2561268, or Dr. Karl Strnat, KSJ Associates, 1616 Hillrose Pl, Fairborn, OH 45324.

JULY 16, 1992

Rare-Earth Magnets and Their Applications, Twelfth International Workshop.
Canberra, Australia.

Robert Street, Dept. of Physics, U of Western Australia, Nedlands WA 6009 Australia.
TEL: (90) 380-2751, FAX: (09) 380-1014.

JULY 20-24, 1992

International Conference on Magnetic Fluids.
Paris, France.

Dr. V. Cabuil, ICMF 6, Universite P. et M. Curie, Box 740, Laboratory of Inorganic Physical Chemistry, 4 place Jussieu, 75252 Paris Cedex 05, France.
FAX: 33-1 44 27 38 41 or 33-1 44 27 38 66.

JULY 21-23, 1992

The Magnetic Recording Conference (TMRC): Magnetic Recording Media for Rigid Disks.

Santa Clara University, Santa Clara, California.
Marti Geredes, IIST, Santa Clara University, TEL: 408-554-6853.

AUGUST 3-5, 1992

Conference on Electromagnetic Field Computation.
Harvey Mudd College, Claremont, CA, USA.

CEFC Secretariat, Harvey Mudd College, Claremont, CA 91711. TEL: 714-621-8019, FAX: 714-621-8465. CEFC@HMCVAX.BITNET.

SEPTEMBER 2-4, 1992

International Conference on Magnetic Recording Media (MRM).
Perugia, Italy.

ADRIA CONGREX; Piazzale Indipendenza, 3; 47037 Rimini (Italy).
Tlx: 550312, TEL: (39)(541) 56404, FAX: (39)(541) 56460.

- SEPTEMBER 7-10, 1992** **First International Symposium on Barium Ferrite and Advanced Magnetic Recording.**
Kalamata, Greece.
Dennis Speliotis, Advanced Development Corporation, 8 Ray Avenue, Burlington, MA 01803.
TEL: 617-229-8800, FAX: 617-229-0112. Details in this issue.
- SEPTEMBER 29-
OCTOBER 2, 1992** **The 6th International Conference on Ferrites.**
Tokyo, Japan.
M. Naoe, Dept. of Physical Electronics, Tokyo Institute of Technology,
2-12-1,0-okayama, Meguro-Ku, Tokyo 152, JAPAN.
TEL: 81-3-3726-1111 ext. 2575, FAX: 81-3-3729-1399.
- NOVEMBER 2-5, 1992** **ASM Symposium on Hard and Soft Magnetic Materials with Applications.**
Chicago, IL.
K. S. Narasimhan 609-829-2220 or J. Salsgiver 412-226-6268.
- DECEMBER 1-4, 1992** **Conference on Magnetism and Magnetic Materials.**
Houston, Texas.
Ms. Diane Suiters, Courtesy Associates, 655 15th St. NW, Suite 300,
Washington, DC 20005, TEL: 202-639-5088, FAX: 202-347-6109.
- DECEMBER 6-9, 1992** **Special Session at GLOBECOM on Signal Processing and Coding for Recording Channels.**
Michael W. Marcellin, Department of Electrical and Computer Engineering,
The Univ. of Arizona, Tucson, AZ 85721. TEL: 602-621-6190,
FAX: 602-621-8076. marcellin@ece.arizona.edu.
- APRIL 13-16, 1993** **International Magnetics Conference (INTERMAG).**
Stockholm, Sweden.
Chuck Thies, INTERMAG '93, % Congrex (USA), Inc., 7315 Wisconsin Avenue,
Suite 606W, Bethesda, MD 20814 USA. TEL: 301- 469-3355, FAX: 301-469-3360.
Details within.
- AUGUST 23-28, 1993** **European Magnetic Materials and Applications (EMMA).**
Kosice, Czecho-Slovakia.
P. Sovak, Dept. of Exp. Physics, Faculty of Sciences, nam.Febr.vitazstva 9,
041 54 Kosice, Czecho-Slovakia. TEL: xx42-95-21128.