



IEEE MAGNETICS SOCIETY

NEWSLETTER

VOLUME 32, NO. 1

ISSN 1059-8340

January 1995

JODIE CHRISTNER, EDITOR

NATIONAL ENGINEERS WEEK TO HONOR CREATOR OF MAGNETIC TAPE RECORDING

WASHINGTON, Dec. 1, 1994 – You won't likely see Marvin Camras on the evening news. Nor will you hear his voice booming from the stereo. Chances are, you're not even going to spot his name on the credit card on an American Express commercial. Camras is no media superstar, yet he is the man who made possible today's \$5-billion electronic communications industry. That's because he developed magnetic tape recording – the technology behind audio cassettes, videotape, computer floppy disks and even credit card magnetic strips.

Camras, a Life Fellow of The Institute of Electrical and Electronics Engineers Inc. (IEEE), is one of thousands of engineering pioneers to be honored during National Engineers Week for their positive contributions to American lifestyles. "The Engineering of Everyday Life" is a theme of National Engineers Week, February 19-25, 1995, selected to draw attention to the myriad aspects of contemporary living which resulted from the often-anonymous work of engineers.

Camras, now 78, developed an interest in electronics while still a youngster growing up in Chicago. At age 18 – to help his cousin practice singing – he first recorded sound on magnetically-charged piano wires. Shortly thereafter, Camras discovered that using magnetic tape eased the work of splicing and storing the recordings. His patent on the process was licensed to General Electric in the mid-1930s, and within a few years 130 companies around the globe were using his inventions to manufacture recording devices.

Camras studied engineering at what is now the Illinois Institute of Technology, where he is still on the faculty as a research professor. While an undergraduate, he was invited by his professors to refine his discoveries on the staff of the school's research foundation.

During World War II, Camras pursued military applications of the magnetic recorder, developing the famed "Model 50," a portable machine that the Allies used to play

recorded, amplified battle sounds at decoy locations during the Normandy invasion. His wartime patents of a ferric oxide magnetic tape and a method for reducing noise and distortion by using high-frequency bias are still standards in consumer tape recorders today.

In 1950, Camras unveiled a prototype video-tape recorder, which led to the widespread use of video tape, the end of live television, and the eventual development of the videocassette recorder now found in most American homes. To date, he has received more than 500 patents, which have been licensed to over 100 manufacturers worldwide. Among his many honors, he was inducted into the Inventors Hall of Fame in 1985, and received the National Medal of Technology in 1990.

He lives today with his family in a solar-powered house he mostly built himself, where he pursues his avocation of crafting high-quality violins and violas – one of which is used by his son-in-law, head of the Chicago Symphony Orchestra's viola section. His son is an electronic engineer with Hewlett Packard.

The IEEE, through its United States Activities division (IEEE-USA), is one of more than 50 organizations sponsoring National Engineers Week 1995. The week involves tens of thousands of engineers in activities designed to increase awareness and appreciation of the engineering profession.

The IEEE is the world's largest technical professional society, with an international membership of some 320,000 electrical, electronics and computer engineers, and computer scientists. IEEE-USA promotes the professional careers and technology policy interests of IEEE members in the United States.

Editor's note: This article and that published in the October 1994 Newsletter provide somewhat different versions of the early history of magnetic tape recording.

IEEE MAGNETICS SOCIETY OFFICERS AND ADMINISTRATIVE COMMITTEE MEMBERS FOR 1995

Election of officers for calendar year 1995 and one third of the Administrative Committee for a three year term beginning on January 1, 1995 was completed on November 1, 1994. The officers and elected AdCom members who will serve in 1995 are the following:

Officers

President J. E. Opfer (ex-officio)

Vice President: D. D. Stancil (ex-officio)

Secretary/Treasurer: E. Della Torre (ex-officio)

Past President: D. A. Thompson (ex-officio)

Elected Administrative Committee Members

Terms Expire December 31, 1995

P. P. Biringer	R. F. Hoyt	R. M. Josephs
J. H. Judy	D. N. Lambeth	M. Pardavi-Horvath
S. Uchiyama	P. E. Wigen	

Terms Expire December 31, 1996

G. E. Fish	H. S. Gill	R. B. Goldfarb
R. S. Indeck	R. A. Johnson	F. E. Luborsky
J. A. Nyenhuis	Y. Sugita	

Terms Expire December 31, 1997

G. Bertotti	S. H. Charap	W. D. Doyle
R. E. Fontana, Jr.	R. Gerber	R. R. Katti
C. M. Perlov	T. Suzuki	

The Nominations Committee which conducted the elections consisted of R. M. Josephs, J.H. Judy, F. E. Luborsky, P. E. Wigen, and D. I. Gordon (chairman).

OBTAINING MAGNETICS SOCIETY INFORMATION FROM THE IEEE COMPUTER

It is now possible to get information about the Magnetics Society in electronic form from the IEEE Computer. At the present time, the only available file is the conference calendar: info.mag.conference.calendar

You can request one or more files from the IEEE file-server using the following procedure:

1. Initiate an email message to filesaver@info.ieee.org.
2. Press return at the subject line. (The filesaver ignores the subject line.)

3. Starting at the first line of the message type the names of one or more files, one per line. Do not add blank lines before or after the lines containing the names of the files.

4. Send the message. Within one hour, if all goes well, you will receive copies of the files that you requested. If you receive no answer, then something has gone wrong.

Many other files are available from the IEEE. For example, type the following in the body of the message

info.info

info.index

and you will receive two files. The file info.info provides information on how to use the IEEE Computer Services. The file info.index contains a listing of files which are available from the IEEE computer. New files from the Magnetics Society will be listed in info.index. The names of Magnetics Society files will always start with info.mag.

Files can also be obtained with gopher to gopher.ieee.org and anonymous ftp to ftp.ieee.org These methods will be described in a future newsletter.

Please send email to nyenhuis@ecn.purdue.edu (John Nyenhuis) if you have questions or if you have Magnetics Society material that you would like posted on the IEEE computer.

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.

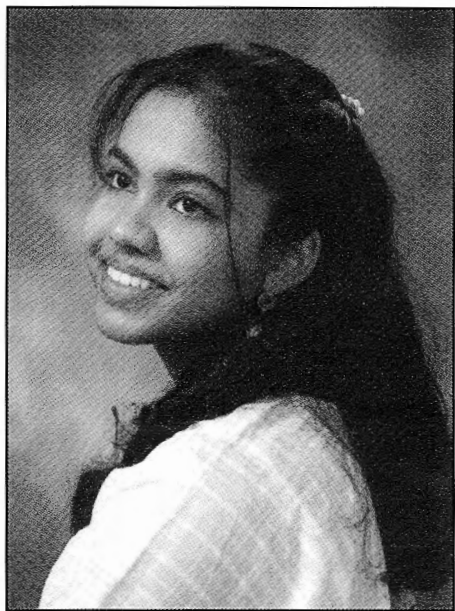
The objective of the **IEEE Magnetics Society Newsletter** is to publicize activities, conferences, workshops and other information of interest to the Society membership and technical people in the general area of applied magnetics. Copy is solicited from the Magnetics Society membership, organizers of conferences, officers of the Society and local chapters and other individuals with relevant material. The Newsletter is published in January, April, July and October. Submission deadlines are December 1, March 1, June 1, and September 1, respectively.

Please send contributions to:

Dr. Jodie A. Christner
1135 Chippewa Drive N.W.
Rochester, MN 55901
TEL: (507) 289-7495
E-Mail: j.christner@ieeee.org

1994

MAGNETICS SOCIETY SCHOLAR



Faeza Rashid

Faeza Rashid is the recipient of the National Merit Scholarship sponsored by the IEEE Magnetic Society. The scholarship amount is \$4000 per year and it provides stipend for up to four years of undergraduate study. Being named a Merit Scholar is recognition as one of our nation's most outstanding young men and women. Some 6,500 Merit Scholars are selected from approximately 14,000 outstanding finalists representing about half of one percent of U.S. high school graduating seniors.

Faeza graduated from R. Nelson Snider High, Fort Wayne in 1994 with an *Indiana Academic Honors Diploma*. She currently attends Rensselaer Polytechnic Institute and is admitted to a combined 6-years B.S./M.D. program jointly with Albany Medical College in Albany, New York. Faeza has been named one of the 500 finalists in the 1994 Presidential Scholars Program. She took honors and AP courses, and has an outstanding academic record. While at her High School, she took college courses including multi-variable calculus, Physics mechanics, and Physics electricity & magnetism at Purdue University at Fort Wayne campus. She completed 39 Purdue credits hours with a 4.0 GPA, in addition to advanced placement credits in mathematics, chemistry and biology.

Among her many honors and achievements, Faeza is the winner of The 1994 Sterling Sentinel award in Science. In an interview with The News Sentinel (Thursday, April 21, 1994), biology teacher Barbara Kampschmidt called Faeza "the most talented student I have encountered in my 22 years of teaching. Students of Faeza's quality are very rare." Faeza plans to double major in biological science and psychology, and wants to be a Cardiologist. She is the daughter of Muhammad H. and Fatema Rashid. Her father Dr. Rashid is a professor of electrical engineering and chair of Engineering Department at Purdue University at Fort Wayne campus.

IMMINK HONORED

The Society of Motion Picture and Television Engineers (SMPTE) has awarded the 1994 Alexander M. Poniatoff Gold Medal for technical excellence to Kees Schouhamer Immink, chief scientist, Phillips Research Labs, The Netherlands. The award is given "for outstanding contributions to the development of new techniques and equipment that have contributed to the advancement of audio and video magnetic recording and reproduction." The medal, named after the founder of Ampex Corp., has been presented at the 136th SMPTE Conference, Los Angeles, October 1994.

ADVANCES IN MAGNETICS ISSUE ON THE FARADAY EFFECT

A special issue commemorating the 150th anniversary of the Farady Effect is being planned.

In 1846, Faraday published his original work on what is now commonly referred to as the Faraday effect. It could be argued that this discovery gave birth to the subject area we now refer to as magneto-optics. I would like to invite Magnetics Society members and Newsletter readers who are active in some aspect of magneto-optics to contribute to an *Advances in Magnetics* issue, in 1996, commemorating the 150th anniversary of this event. Papers on any of the familiar magneto-optic effects (Kerr, Voigt, Cotton-Mouton, gradient, etc.) will be considered appropriate, particularly those relevant to the field of magnetics.

The conditions for publication will be the same as for regular contributions to the *IEEE Transactions on Magnetics* (see 'Information for Authors' in any current issue of the *Journal*). In order to best accommodate the wishes of the authors regarding the lengths of their contributions, as well as to gauge overall response to this invitation, I request that contributors send me proposed title and short (<100 words) abstract by April 30, 1995. In the event of a large response to this invitation, I will proceed on the understanding that contributing authors will be prepared to join a panel of referees.

Please send contributions by E-mail, FAX or regular mail to:

Dr. Martin R. Parker
317 Houser Hall, Box 870286
University of Alabama
Tuscaloosa, AL 35487-0286
FAX: (205) 348-6959
E-MAIL: mparker@coe.eng.ua.edu

IN MEMORY:

Dr. Herbert F. Storm – Founder of the Intermag Conference and the IEEE Magnetics Society

prepared by Joe Suozzi and Fritz Friedlaender

Dr. Herbert F. Storm, formerly of GE, died at his home in Delmar, NY on November 15, 1994.

Born in Vienna, Storm received his Doctorate in Electrical Engineering, cum laude, in 1933 from The Technical University, Vienna, Austria. His early work was in research and development in industrial electronics. In 1946, he joined the Control Department of General Electric in Schenectady, NY. At that time, saturable reactors and magnetic amplifiers were being used in many control applications. Dr. Storm created a unified theory for both magnetic amplifiers and saturable reactors and raised the design techniques from empiricism to an engineering level. He wrote the book "Magnetic Amplifiers" which became the "Bible" of the field at that time. He spearheaded the development of magnetic exciters for generators; he led the development of three-phase magnetic amplifiers to replace amplidynes. He was named Consulting Engineer, Solid State Electronics, and directed the development of MOS-FETs, bilateral switches, fast recovery diodes, triacs and thyristors, especially the GTO (gate turn-off) thyristor.

After retiring in 1973, he was retained by GE as a consultant. For over 10 years, he was Adjunct Professor of Electrical Engineering at the Graduate Division of Rensselaer Polytechnic Institute in Troy, NY.

He held over 20 patents and was the author of more than 50 professional papers.

Dr. Storm was the founder and first President of the IEEE Magnetics Society (formerly the Magnetics Group of AIEE). He was also the founder of the first chairman (1963) of the International Magnetics Conference and he coined the title "INTERMAG" for this conference. In 1968, he received the Magnetics Society Award for "inspiring leadership, clear vision and dedication to professional development." The IEEE's Herbert F. Storm Best Technical Paper Award is named in his honor.

He also served as a member of the nominating committee for the Magnetics Society Achievement Award which he had been awarded in 1982. He was a member of the editorial board of the IEEE Transactions on Magnetics and recipient of the IEEE Centennial Medal in 1984.

The Magnetics Society offers its deepest sympathy to his wife, Mary Kozlowski Storm, and his daughters, Elizabeth Mary Storm of California and Marietta Douglas of Connecticut.

12th SOFT MAGNETIC MATERIALS CONFERENCE

The international conference "Soft Magnetic Materials" (SMM12) will be held in Krakow (Cracow), Poland, on September 12-14, 1995. The Conference, 12th in the series, is being organized by the Institute of Physics, Polish Academy of Sciences and the Department of Electronics of the Academy of Mining and Metallurgy. The Conference provides a forum for presentation of the advances in basic research, characterization, production and application of soft magnetic materials.

Individuals interested in SMM12 should contact:

Dr. Marek Gutowski
Scientific Secretary of the SMM12
Institute of Physics, Polish Academy of Sciences
Al.Lotnikow 32/46, 02-668 Warszawa, Poland
Phone: (+48 22) 43-5212
FAX: (+48 22) 43-0926
E-mail: smm12@gammal.ifpan.edu.pl

IEEE FELLOW NOMINATIONS

The Fellow Nominating Subcommittee of the Magnetics Society has established a "clearing house" for nominations for the IEEE Fellow Awards.

If you intend to nominate a Magnetics Society member for this award, please let me know about it. Hopefully, this information will avoid duplication of effort and will prevent worthy candidates from being overlooked.

Fellow Nominating Subcommittee
c/o Richy Josephs
Innovative Instrumentation Inc.
220 Limestone Lane
Willow Grove, PA 19090
(215) 659-6719 (office)
(215) 646-3272 (factory voice/fax)



ENGINEERS
Turning Ideas
Into Reality®

INTERMAG '95

Intermag '95 will be held in San Antonio, Texas on Tuesday, April 18 through Friday, April 21, 1995 at the Marriott Rivercenter Hotel.

SCOPE OF THE CONFERENCE

The 33rd Annual Intermag Conference is a forum for engineers and scientists to discuss the field of magnetics from basic research to applications. Sessions will include invited and contributed papers, poster sessions and symposia. The diversity of magnetics is represented by presentations covering all branches of magnetics and related technology. Six Technical Symposia will be held during the Conference: MR Heads, Magnetic Circular Dichroism, M-O High Density Recording, Advanced Technologies in Magnetic Recording Tapes, Thin Film Media, High Resolution Magnetic Imaging, and one Tutorial: Magnetic Methods in Nondestructive Evaluation. The Plenary Session will feature Mr. Glenn A. Reitmeier, Director, High Definition and Imaging Laboratory at the National Information Display Laboratory at The David Sarnoff Research Center. Preceding Mr. Reitmeier will be the presentation of the Magnetics Society Awards and the IEEE Fellow Awards.

For further information contact the conference coordinator:

Diane Suiters
Courtesy Associates
655 15th St. NW, Suite 300
Washington, DC 20005
TEL (202) 639-5088
FAX (202) 347-6109
DIANE+la+COURTESY%
Courtesy_Associates@mcimail.com

IEEE REYNOLD B. JOHNSON INFORMATION STORAGE AWARD



The IEEE Reynold B. Johnson Information Storage Award was established by the Board of Directors in 1991 and may be presented annually "for outstanding contributions to the field of information storage, with emphasis in the area of computer storage." Recipient selection is administered by the Awards Board through its Technical Field Awards Council.

The Award consists of a bronze medal, certificate and five thousand dollars, and is sponsored by IBM Corporation. It is named in honor of Reynold B. Johnson, who is renowned as a pioneer of magnetic disk technology and was founding manager of the IBM San Jose Research and Engineering Laboratory, San Jose, California in 1952, where IBM research and development in the field was centered.

The Award was presented for the first time in 1993 to: **JOHN M. HARKER.**

WHAT IS AN ENGINEER?

How Do You
Describe Your
Profession
to Young People?



If you need help preparing for a Career Day or other event at your child's school, you can borrow IEEE-USA's new guidelines for talking with young people about the profession of electrical, electronics, and computer engineering. IEEE-USA's Precollege Education Committee has produced a speaker's guide and suggested script - with 42 slides - to help IEEE volunteers plan presentations about the electrical engineering profession.

Whether you're addressing middle-school and high-school classes, youth club, or other groups of young people, you will find the guidelines helpful. You can add your own slides to the presentation to illustrate the work you do.

Contact the IEEE-USA Office now to get "What Is An Engineer?" - especially if you're planning to participate in Discover "E" school visits during National Engineers Week. Address: IEEE United States Activities, 1828 L Street N.W., Suite 1202, Washington, DC 20036, (202) 785-0017, FAX: (202) 785-0835 or e-mail a.hartfiel@iee.org (Internet).



CALL FOR NOMINATIONS:

REYNOLD B. JOHNSON INFORMATION STORAGE AWARD

- An IEEE Field award for significant contributions to information storage.
- Nominees will be judged on the historical significance and the impact of their contribution on the evolution of computer storage systems.
- The recipient will receive \$5,000 and a medal.
- Nomination forms are available from:

Maureen Quinn, Manager
IEEE Awards and Recognition
345 East 47th Street
New York, NY 10017
Phone: (212) 705-7882
FAX: (212) 223-2911

MAGNETICS SOCIETY CHAPTERS

Chairman:

Dr. Subrata Dey
Storage Technology Corporation
2270 South 88th Street, M/S 8110
Louisville, CO 80028-8110
Bus: (303) 673-6494 Home: (303) 581-9809
Fax: (303) 673-6540
e-mail: Subrata_Dey@stortek.com

305 Lincoln Woods
Laafayette Hill, PA 19444
Bus: (215) 499-4050
Fax: (215) 499-4059

1. Santa Clara Valley

Position Vacant

2. San Diego

Dr. Fred Jeffers
Eastman Kodak Company
San Diego Laboratories
3985 Sorrento Valley Blvd.
San Diego, CA 92121-1402
Bus: (619) 535-6919
Fax: (619) 535-6990
Meeting Day and Time: 3rd Thursday, 7:00 p.m.

3. San Francisco

Position Vacant

4. Pittsburgh

Position Vacant

5. Twin Cities

Yung Yip
13610 Embry Way
St. Paul, MN 55124
Bus: (612) 737-1091 Home: (612) 322-1697
Fax: (612) 737-2801

6. U.K and Republic of Ireland

John N. Chapman
5 Campbell Avenue
Milngavie
Glasgow, B62-6DL
Scotland, U.K.
Bus: 44-1-41-3304462 Home: 44-1-41-9565757
Fax: 44-1-41-3349029

7. Central New England Council (Boston)

John S. Judge
11 Macgrath Road
Durham, NH 03824
Bus: (603) 868-1644

8. Los Angeles (San Gabriel Valley)

Harvey H. Horiuchi
851 Valante Drive
Arcadia, CA 91006
Bus: (818) 393-1026 Home: (818) 446-4791

9. Philadelphia

Prof. Bryen E. Lorenz

10. Washington D.C.

Position Vacant

11. Central Indiana Section

Herbert E. Pietsch
7741 North 100 West
West Lafayette, IN 47906
Bus: (317) 497-0077

12. Tokyo

Prof. Kaneo Mohri
3911-3 Shimada Kuroishi
Tenpaku-Cho
Tenpaku-Ku Nagoya 468
Japan
Bus: 81-52-781-5111, ext. 3307
Fax: 81-52-782-3477

13. Houston

Jeffery T. Williams
Univeristy of Houston
Dept. of Electrical Engineering
4800 Calhoun Road
Houston, TX 77204-4793
Bus: (713) 743-4455
Fax: (713) 743-4444

14. Denver

Dr. James Cates
Storage Technology Corporation
2270 South 88th Street, M/S 8110
Louisville, CO 80028-8110
Bus: (303) 673-4126
Fax: (303) 673-6540

15. Milwaukee

John A. Brauer
The MacNeal-Schwendler Corporation
Suite 300
4300 West Brown Deer Road
Milwaukee, WI 53223
Bus: (414) 357-0333 Home: (414) 276-0042
Fax: (414) 357-0347

16. St. Louis

Mr. Richard W. Kiefel
220 Simmons
St. Louis, MO 63119
Bus: (314) 223-6080

17. Northern Virginia Section

Position Vacant

40TH ANNUAL CONFERENCE ON MAGNETISM AND MAGNETIC MATERIALS

Philadelphia, Pennsylvania USA
November 6-9, 1995

The Fortieth Annual Conference on Magnetism and Magnetic Materials will be held at the Wyndham Franklin Plaza Hotel, Philadelphia, Pennsylvania USA. The Conference annually brings together scientists and engineers interested in recent developments in all branches of fundamental and applied magnetism. Emphasis is traditionally placed on experimental and theoretical research in magnetism, the properties and synthesis of new magnetic materials and advances in magnetic technology. The program will consist of invited and contributed papers. Selection of contributed papers is based on abstracts which are due on May 24, 1995. An Abstract Booklet will be available in advance of the Conference from the American Institute of Physics. Registrants will receive the booklet at the Conference. Proceedings will be published in the Journal of Applied Physics.

In addition, this year marks the 40th anniversary of MMM Conference. Special activities will be held in honor of this event. Attendees from early MMM meetings will be invited to participate in the celebrations.

Individuals who are not on the Conference mailing list may obtain Conference information and details concerning the preparation of abstracts by contacting the conference coordinator: Diane Suiters, Courtesy Associates, 655 15th Street N.W., Suite 300, Washington, DC 20005; telephone (202) 639-5088, FAX (202) 347-6109 or the Publicity Chair: John Nyenhuis, Purdue University, School of Electrical Engineering, 1285 Electrical Engineering Building, West Lafayette, IN 47907-1285, telephone (317) 494-3524, FAX (317) 494-6440, email: nyenhuis@ecn.purdue.edu.

This topical conference is sponsored jointly by the American Institute of Physics and the Magnetics Society of the IEEE in cooperation with the American Physical Society, the Office of Naval Research, the Minerals, Metals and Materials Society, the American Society for Testing and Materials and the American Ceramic Society. The meeting will be open to all persons subject to a registration fee of approximately \$300 (marked reduction for students).

PAPERS SOLICITED FOR MORIS '96

The fourth Magneto-Optical Recording International Symposium (MORIS '96) will be held in Noordwijkerhout, The Netherlands on April 29-May 2, 1996, which is right after the Intermag '96 conference held in Budapest, Hungary.

The purpose of MORIS '96 is to provide a forum for information exchange on magneto-optical recording and

the related theories. A broad range of topics covering materials, physics, technology of recording as well as fundamental background studies will be addressed. It will include invited and contributed papers in both oral and poster sessions. No parallel sessions will be conducted. English is the official language at MORIS '96. A halfday tutorial session is planned.

The symposium will be sponsored by the Magnetic Society of Japan, IEEE Magnetics Society and other European organizations.

Papers are solicited on all topics relevant to magneto-optical recording and the background physics. Subject areas are: materials, magnetism, magneto-optical effects, deposition technologies, substrates, reliability, high density recording, direct overwrite, magnetic super resolution, domain physics, microstructural characterization, drive technology and heads and future technology.

The second call for papers with details regarding hotel reservations, registration fees and other information can be expected in April 1995. To receive further information about MORIS '96 please contact J.C. Lodder, MESA-Research Institute, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands, tel: +31 53 892750, fax: +31 53 309547, e-mail: lodder@el.utwente.nl.

Introducing the **IEEE-USA** **National** **Job-Listing Service**

The Information Superhighway
...The Road to Your Next Job!

IEEE United States Activities has developed an electronic job-listing service that gives members free information on job openings across the nation.

To access current job listings, send an e-mail message to any of these Internet addresses (no subject line or text message is needed; files will automatically return to your e-mail address):

Regions 1-6: [info.ieeeusa.jobs.r\[insert IEEE region number: 01-06\]@ieee.org](mailto:info.ieeeusa.jobs.r[insert IEEE region number: 01-06]@ieee.org)
Nationwide & non-U.S.: ...jobs.other@ieee.org

If you don't have Internet access, ask your Section officers for assistance. For additional information, contact Bill Anderson at 202-785-0017, 202-785-0835 (fax) or w.anderson@ieee.org (Internet).



THE INSTITUTE OF ELECTRICAL
AND ELECTRONICS ENGINEERS, INC.

IEEE UNITED STATES ACTIVITIES
1828 L Street, N.W., Suite 1202
Washington, DC 20036-5104, U.S.A.

IEEE MAGNETICS SOCIETY NEWSLETTER CONFERENCE CALENDAR

APRIL 18-21, 1995

INTERMAG 95

San Antonio, TX.

Diane Suiters, Courtesy Associates, 655 15th Street NW, Suite 300,
Washington, DC 20005, TEL: 202 639-5088, FAX: 202 347-6109

APRIL 29-MAY 2, 1995

4th Magneto-Optical Recording International Symposium (MORIS '96).

Noordwijkerhout, The Netherlands.

J.C. Lodder, MESA-Research Institute, University of Twente, P.O. Box
217, 7500 AE Enschede, The Netherlands, TEL: +31 53 892750,
FAX: +31 53 309547, E-Mail: lodder@el.utwente.nl

JULY 17-19, 1995

6th International Conference on Magnetic Recording Media, (MRM)

Oxford, UK.

MRM 1995, The Institute of Physics 47 Belgrave Square,
London SW1X8QX, UK, TEL: +44 71 235 6111, FAX: +44 71 823 1051,
E-Mail: iopconf@ulcc.ac.uk

SEPTEMBER 12-14, 1995

12th International Conference on Soft Magnetic Materials (SMM12).

Krakow, Poland.

Dr. Marek Gutowski, Scientific Secretary of the SMM12, Institute of
Physics, Polish Academy of Sciences, Al.Lotnikow 32/46, 02-668
Warszawa, Poland, TEL: (+48 22) 43-5212, FAX: (+48 22) 43-0926,
E-Mail: smm12@gammal.ifpan.edu.pl.

SEPTEMBER 17-20, 1995

International Symposium on Non-Linear Electromagnetic Systems (ISEM)

Cardiff, Wales, UK.

ISEM 95 Secretariat, Cardiff School of Engineering,
University of Wales College of Cardiff, P.O. Box 917, Newport Road,
Cardiff CF2 1XH Wales, UK, TEL: +44-222-874070,
FAX: +44-222-874420

NOVEMBER 6-9, 1995

40th Annual Conference on Magnetism and Magnetic Materials (MMM '95)

Philadelphia, Pennsylvania USA

Diane Suiters, Courtesy Associates

655 15th Street NW, Suite 300

Washington, DC 20005

TEL: 202 639-5088, FAX: 202 347-6109

