



IEEE MAGNETICS SOCIETY NEWSLETTER



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RICHARD M. JOSEPHS, EDITOR

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INTERMAG PROGRAM HIGHLIGHTS, GRENOBLE, FRANCE, MAY 12-15, 1981

INTERMAG-81, the 19th International Magnetism Conference, will take place from Tuesday, May 12th, to Friday, May 15, 1981, at the Alpes Congrès Conference Center in Grenoble, France. The meeting is jointly sponsored by the Magnetism Society of IEEE, the Société Française de Physique and the Société des Electriciens, des Electroniciens et des Radioélectriciens. Grenoble, host city for the Conference, is at the same time the fastest growing city in France, a major center for science and technology in Europe, and a symbol of the important contributions from France to magnetism. The city is dramatically situated in the heart of the Alps. The meeting is open to all persons subject to the payment of a registration fee.

The Program Committee has chosen a record 385 papers from 23 countries in all areas of Applied Magnetism and related magnetic phenomena, and has arranged 4 workshops. There will be an outstanding plenary session and also an interesting social program with events for accompanying participants as well as for all registrants.

The Plenary Session on the afternoon of Tuesday, May 12th, will be highlighted by participation of two of the most distinguished members of the science/technology community of France. They are Professor Louis Néel, whose broad researches in magnetism have profoundly influenced its science and application for nearly a half century, gaining for him the Nobel Prize for Physics in 1970; and Professor Pierre Aigrain, whose outstanding career in science, academia, industry and government has led to his position as Secretary of State for Research in the Office of the Prime Minister. They have chosen to speak respectively on "Some Unsolved Problems in Magnetism" and "Magnetism - Outstanding Example of Modern Materials Science and Technology."

The Workshops touch four of the most popular subjects at the meeting. They are:

- Technologies of Mass Data Storage
- Tutorial Review of Magnetic Recording
- Testing and Reliability of Magnetic Bubble Memories
- Amorphous Magnetic Materials

The broad scope of the technical program is revealed in the listing of condensed session titles:

- Magnetic Printing
- Recording Processes
- Systems, Heads, and Media
- Bubble Memories, Physics, Devices, Systems and Processing
- Ion Implanted Bubbles
- Computer Methods in Magnetism, Eddy Current and Field Calculations; Design of Electromagnetic Devices
- Amorphous Alloys
- Permanent Magnets
- Magnetic Separation
- Soft Magnetic Materials (alloys, silicon/iron and ferrites)
- Domains and Walls
- Microwave Materials
- Magneto-Optics
- Power and Transformers
- Magnetometry
- Superconductors

An exhibition of equipment, components, materials and services has been arranged with some of the member firms engaged in research, manufacturing and applications related to the topics of INTERMAG.

The meeting is open to all persons, subject to the payment of a registration fee, ranging from \$95 to \$175 (pre-registration for members of sponsoring societies) to \$650 (registration at the conference for non-members).

Prospective attendees who have not yet made hotel arrangements should contact the authorized agent, ALPTOUR, Avenue d'Innsbruck, 38029 Grenoble (Cedex), France; Tel: (76)-22-18-18, as soon as possible.

For other information, contact:

Conference Secretariat
INTERMAG-81
LETT/NCR - CEM/G
85X
F38041, Grenoble, CEDEX, France

For information in the U. S., contact:

Conference Chairman, J. M. Lommel
G. E. Corporate Research & Development Cntr.
P. O. Box 8
Schenectady, NY 12301

DISTINGUISHED LECTURERS

The Magnetism Society is pleased to announce the Distinguished Lecturers for 1981. They are:

1. A. E. Berkowitz, General Electric Corporate Research & Development, Schenectady, NY 12301, "Magnetic Printing."
2. J. F. Dillon, Jr., Bell Laboratories, Murray Hill, NJ 07974, "Magneto-Optics."
3. C. D. Graham, Jr., Department of Materials Science and Engineering, and Laboratory for Research on the Structure of Matter, University of Pennsylvania, Phila., PA 19104, "Squeezing the Hysteresis Loop: Control of Energy Losses in Magnetic Materials & Devices."

The Distinguished Lecturer Program is intended to provide tutorial overviews of topical subjects in magnetism, to expose students to the excitement, challenge, and methods of technical innovation, and to introduce developments in magnetism to the non-technical community. It is an opportunity for local chapters, universities and other technical, educational and business groups to hear outstanding members of the magnetism community. The cost will be borne by the Society.

Any group interested in scheduling a Lecturer should contact the program coordinator, Geoffrey Bate, Verbatim Corporation, 321 Soquel Way, Sunnyvale, CA 94086, (408) 245-4400, X 214.

MAGNETICS SOCIETY AWARDS

The Awards Committee requests nominations for the most prestigious Award of the Society. Please submit the names of deserving candidates for both the 1981 and 1982 Awards to the Chairman of the Awards Committee:

Professor P. P. Biringer
Dept. of Electrical Engineering
University of Toronto
Toronto, Ont. M5S 1A4

Society Achievement Award

The Award is given by the Magnetics Society for outstanding contribution(s) or leadership in the field of Magnetics or Magnetic Devices.

Prize: Appropriate plaque and \$1,000.

Nomination: Any member of the Magnetics Society may submit a nomination to the Chairman of the Awards Committee.

Selection Criteria: The selection criteria for the nominee is based on tangible evidence of achievement substantiated by documentation submitted by the nominator(s). The decision of the Awards Committee is final.

Presentation of the Award: The Award is presented at Plenary Session of the yearly Intermag Conference by the President of the Society or his designated representative.

ADDITIONAL SESSION SUMMARY, 1980 MMM CONF., NOV. 11-14, DALLAS

Session DA. SPIN GLASS SYMPOSIUM. J. S. Kouvel.

The symposium consisted of four invited papers on various outstanding aspects of the spin-glass (SG) problem. Of considerable current interest are atomically disordered systems which at certain compositions transform from a SG state to a ferromagnetic state before disordering magnetically with increasing temperature. M. B. Salamon and K. V. Rao (University of Illinois, Urbana) reported on such a system, the glass series $(\text{Fe}_{1-x}\text{Mn}_x)_{75}\text{P}_{16}\text{B}_6\text{Al}_3$, and presented their experimental results for the critical exponents for the SG-ferromagnetic transition as well as for the ferromagnetic-paramagnetic (Curie-point) transition. The exponents for the former are nearly those of the Heisenberg model, whereas the exponents for the latter resemble those often found in random magnets. Such results depend, of course, on the assumption that the SG state is thermodynamically stable. Pertinent to this, I. Morgenstern and K. Binder (Institut für Festkörperforschung, KFA, Jülich) reported on their calculations for finite Ising lattices with random bonds, from which they conclude that there is no stable SG order at nonzero temperatures and that, relatedly, the SG ordering transition is a non-equilibrium phenomenon. The latter implies that the temperature of the susceptibility peak normally used to identify the SG transition would shift with the frequency of the applied alternating field. A shift of this kind was reported by J. Ferre and J. Rajchenbach (Laboratoire de Physique des Solides, CNRS, Orsay) and H. Maletta (Inst. Festk., KFA, Jülich), who presented the results of their optical Faraday-rotation measurements on the SG insulator, $\text{Eu}_0.48\text{Sr}_{0.6}\text{S}$. They also showed that the peak normally observed for the thermoremanence as a function of

The IEEE Magnetics Society Newsletter is published quarterly by the Institute of Electrical and Electronics Engineers, Inc., 345 East 47 Street, New York, New York 10017. The objective of the Newsletter is to publicize activities, conferences, workshops, and other information of interest to the membership of the Society and technical people in the general area of applied magnetics. Copy is solicited from the S-MAG membership, organizers of conferences, officers of the Society and local chapters, and other individuals or organizations with potentially relevant material. Copy should be sent to Dr. R. M. Josephs, Editor, Magnetics Society Newsletter, Sperry Univac, P. O. Box 500, Blue Bell, Pennsylvania 19424.

field results from the time dependence of the magnetization during the field-cooling process. In the final paper, R. N. Bhatt (Bell Laboratories, Murray Hill) reported on some calculations for random-site systems with Heisenberg antiferromagnetic coupling, in which a scaling scheme was used to reduce the size of the spin clusters that need to be considered. A cogent result of these calculations is the absence of any anomaly in the susceptibility down to very low temperatures. The SG symposium thus ended appropriately on a note of frustration.

DEPT. OF DEFENSE INITIATES SMALL BUSINESS ADVANCED TECH. PROGRAM

The Department of Defense has announced establishment of a Defense Small Business Advanced Technology Program to capitalize on the historic creative potential of small high technology firms. The program is designed to promote innovative solutions to scientific and technical problems facing the defense community by increasing the participation of small high technology firms in the Department's research and development initiatives. Approximately 20 research and development project areas of particular interest to the Army, Navy, Air Force, and Defense Advanced Research Projects Agency (DARPA) will be identified for exploration under a three-phase program. Phase I awards of up to \$50,000 each are contemplated for preliminary research and development to demonstrate the feasibility of those proposals deemed most likely to yield solutions to R&D problems identified by the Military Departments and DARPA. Contracts under Phase I will last for six months. Based on the results of Phase I efforts, DoD plans to award advanced development contracts ranging from \$100,000 to \$500,000 each in Phase II for a period of up to two years for the projects judged most promising. Phase III will include follow-on DoD production awards, where appropriate, and/or commercial application of the research and development. Commercial application would be funded with private venture capital. A key figure of the program is its streamlined procedure for reducing the small firm's initial investment in proposal writing. Phase I proposals are limited to 20 pages. The Defense Small Business Advanced Technology Program is not a substitute for current unsolicited proposal mechanisms. It is designed to augment existing acquisition processes and to better inform DoD research offices of the technological potential of the small business community. The Defense Small Business Advanced Technology Program Brochure is scheduled for distribution in April 1981, with proposals to be submitted to the respective Services and the Defense Advanced Research Projects Agency by August 31, 1981. Awards are expected to be made in December 1981.

Program information may be obtained by writing to:

Hal C. Felsher
Director, Small Business & Economic Utilization
Policy, Office, Under Secretary of Defense for Research and Engineering (Acquisition Policy)

Room 2A 340
Pentagon
Washington, D. C. 20301

MICROSTRUCTURE & PROPERTIES OF MAGNETIC MATERIALS

Two sessions on "Microstructure and Properties of Magnetic Materials" will be held at the ASM-AIME Fall Meeting in Louisville, Ky., Oct. 11-15, 1981. The sessions, consisting of invited papers dealing with hard and soft magnetic materials, have been organized by the ASM Electrical, Magnetic, and Optical Phenomena Activity, G. Y. Chin, Chairman. Materials discussed will include precipitation-hardened Fe-base and cobalt-rare earth permanent-magnet alloys, crystallized amorphous metals, non-oriented and oriented electrical steels, and amorphous metals for 60 Hz and high-frequency applications. For further information, contact J. D. Livingston, General Electric Co., Corporate Research and Development, Schenectady, N. Y., 12301.

ADVANCES IN PERM. MAG. MATERIALS, DESIGN, & APPLICATIONS, MAY 18-22, 1981, CAMBRIDGE, U.K.

Aims of the Short Course:

This short course presents a study of the recent advances that have occurred in the development of permanent magnet materials, in the techniques for design and evaluation of permanent magnet devices, and in the methods for treating and stabilizing magnets. The tutorial sessions are presented by four engineers with international reputations for research, development and design of permanent magnets. It is a residential course, with opportunity for exchange of problems between participants, and for discussions with lecturers.

Intended for

all engineers, designers and researchers involved in electromagnetic and electromechanical devices using permanent magnets.

Location and Dates:

The 1981 Short Course will be held in Cambridge, England, a small city 60 miles north of London, famous for its University. The University Arms Hotel is located in Regent Street in the City Centre, and most of the Colleges are within easy walking distance: Downing College, across the street, will host the Course Banquet.

The dates for the course are May 18-22, 1981 (these dates follow the IEEE Intermag Meeting in Grenoble, France, May 12-15).

This is the 5th Short Course in a series on Modern Permanent Magnet Materials that have been held at the University of Southern California in Los Angeles in 1978 and 1979, and in 1980 at the University of Dayton, Ohio, and at the University of Cambridge, England. The 1981 course focuses on recent advances in the design and application of permanent magnet materials.

Information:

Dr. Peter Campbell (Course Co-ordinator)
University of Southern California, Department of
Electrical Engineering, PHE 610, Los Angeles,
Calif. 90007, USA. Phone: (213) 743-5552;
Telex: 674803.

MICROWAVE MAGNETICS TECH. WORKSHOP, JUNE 10-11, 1981, ROME AIR DEVELOPMENT CENTER, HANSCOM AIR FORCE BASE, MA

The Antennas and RF Components Branch of the Electromagnetic Sciences Division, RADC will hold a workshop on Microwave Magnetics Technology, emphasizing magnetostatic waves (MSW), on June 10-11, 1981. The objective of this workshop is to assess the state-of-the-art in microwave magnetics with emphasis on magnetostatic wave technology in epitaxial yttrium iron garnet films (EPI-YIG) on gadolinium gallium garnet substrates. It is intended to bring together individuals involved in microwave magnetics research and development with those interested in the application of this technology to microwave systems.

MSW is in a transition stage. On the one hand, there is much basic research that remains to be done. On the other hand, specific devices are being fabricated and evaluated for their device potential, and the first system application is in the planning stages. Among the issues to be raised at the workshop are: Where is the technology going from here? What should be our goals over the next two to three years? What priorities should be placed on problems such as reducing, controlling, or utilizing dispersion? What are the promising areas for R&D, and what are the important applications?

The format of this workshop will consist of papers presented in an informal atmosphere. The workshop

will be unclassified. Attendance at the workshop will be limited, and will consist of participants presenting papers, appropriate representatives from nonprofit organizations, interested Government personnel, and appropriate representatives from industry.

For further information, contact:

James C. Sethares, Chairman
Microwave Magnetics Technology Workshop
Electromagnetic Sciences Division/EEAC
Rome Air Development Center
Hanscom Air Force Base, MA 01731
Telephone (617) 861-4663 Autovon: 478-4663

MAGNETISM SUMMER SCHOOL, AUG. 9-29, 1981, UNIV. OF DUNDEE

22nd SCOTTISH UNIVERSITIES SUMMER SCHOOL IN PHYSICS

A NATO ADVANCED STUDY INSTITUTE

MAGNETISM IN SOLIDS - SOME CURRENT TOPICS

SCIENTIFIC CONTENT

There will be approximately 45 lectures of 90 minutes duration (including discussion) aimed at postgraduate students of at least one year's standing and other workers in the field. A number of less formal seminars will also be arranged. All lectures will be given in English. The lecture programme is provisionally:

E.W. Lee (Southampton): Survey of magnetism in solids, the current scene.

A.R. Ferchmin (Poznań): Magnetic ordering in amorphous materials.

J.A. Mydosh (Leiden): Spin-glasses, the experimental situation.

S. Kirkpatrick (New York): Spin-glasses, the theoretical situation.

M. Steiner (Berlin): Solitons in one-dimensional magnetic systems.

A. Janner (Nijmegen): Generalised symmetry groups for incommensurate structures.

V.A. Koptsik (Moscow): Generalised symmetry groups for imperfect structures.

C. Borghese, P. de Gasparis (Rome): Growth of magnetic thin films and magnetic resonance experiments.

B.A. Kalinikos (Leningrad): Travelling wave theory for thin films.

J. Jakubovics (Oxford): Domains and defects in alloys.

J. Slonczewski (New York): Domain walls in bubble materials.

H. Puzkarski (Poznań): Theory of surface states and magnetic resonance.

In addition to the above topics, lectures will be given on renormalisation group theory and critical phenomena.

The Proceedings of the Summer School will be published as soon as possible after the completion of the School.

GENERAL INFORMATION

The fee for the School will be in the region of £250 to £275 inclusive of all tuition, meals and accommodation in a university hall of residence. Some accommodation is also available for wives (or husbands) and children for whom an economic charge for meals and accommodation will be made. This will amount to approximately £12 per day for adults with reduced rates for children depending on their ages and requirements. A full social programme of entertainments and excursions to nearby places of interest will be arranged.

Application forms, with any notes firmly attached, should be returned to the Secretary, Dr. W.M. Young, by 15th May 1981. Each applicant should be supported by a letter of recommendation from his Head of Department or Research Supervisor. Some bursaries are available for students who cannot get financial assistance elsewhere. Requests for a bursary must be accompanied by a specific recommendation in the letter from the applicant's referee.

All correspondence should be addressed to

Dr. W.M. Young
Secretary 1981 SUSSP
Carnegie Laboratory of Physics
University of Dundee
Dundee DD1 4HN
Scotland, U.K.

Tel. 0382 23181 Ext. 297
Telex 76293

MMM CONF., NOV. 10-13, 1981, ATLANTA

The Twenty-Seventh Annual Conference on Magnetism and Magnetic Materials will be held at the Sheraton-Atlanta Hotel, Atlanta, Georgia, 10-13 November 1981. 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 both invited and contributed papers. Selection of contributed papers is based on abstracts whose submission deadline is 20 July 1981. A Program Booklet listing titles and authors of all papers selected for presentation at the Conference will be distributed prior to the Conference. An Abstract Booklet will be available in advance of the Conference for a fee of \$5. Registrants will receive this booklet at the Conference. The Conference Proceedings will be published in the Journal of Applied Physics.

Individuals who are not on the Conference mailing list may obtain Conference information and details concerning the preparation of abstracts in the prescribed format by writing Dr. Hugh C. Wolfe, American Institute of Physics, 335 East 45th Street, New York, NY 10017. The deadline for receipt of abstracts by Dr. Wolfe is 20 July 1981.

This topical conference is sponsored jointly by the American Institute of Physics and the Magnetism Society of the IEEE in cooperation with the American Physical Society, the Office of Naval Research, the Metallurgical Society of the AIME and the American Society for Testing and Materials. The meeting will be open to all persons subject to a registration fee of about \$70 (marked reduction for students).

4TH INT. CONF. ON VIDEO & DATA RECORDING, APRIL 5-7, 1982, LONDON

Since the last very successful IERE International Conference on Video and Data Recording, which was held at the University of Southampton in 1979, there have been many important developments in domestic video

recording, and in digital video and audio techniques. In addition, the applications of re-usable magnetic media are being extended and also being challenged by rapid advances in alternative technologies. A fourth Conference in this series is therefore to be held at the Kensington Conference and Exhibition Centre, London, from 5-7 April, 1982.

The Organising Committee, which is under the Chairmanship of Mr. R. Larry (British Broadcasting Corporation), and includes representatives from Industry, Government Research Establishments and Universities, now invites the submission of synopses for this Conference. For guidance a non-exclusive range of subjects is listed below, but the Organising Committee would welcome Papers on other related topics.

- Theory of Recording Processes
- Magnetic and other Recording Media
- Recording Techniques and Hardware
- Coding, Modulation and Signal Processing
- Digital Audio and Video Recording
- Mass Storage and Retrieval
- New Techniques, Applications and Systems

All enquiries regarding the Conference should be addressed to:

Conference Secretariat
Institution of Electronic and Radio Engineers
99 Gower Street, London WC1E 6AZ
Telephone: 01-388 3071
Telegrams: Instrad London WC1

CONFERENCE CALENDAR

INTERMAG, May 12-15, 1981, Grenoble, France (see announcement).

Advances in Magnetic Filtration, May 18-19, 1981, Univ. of Salford.

Advances in Permanent Magnet Materials, Design & Applications, May 18-22, 1981, Cambridge, U. K. (see announcement).

Microwave Magnetics Tech. Workshop, June 10-11, 1981, Rome Air Development Center, Hanscom Air Force Base, MA (see announcement).

Workshop on Applied Magnetic Recording, June 16-17, 1981, San Francisco.

1981 Power Electronics Specialists Conf., June 29-July 2, 1981, Boulder, Colorado.

1981 Cryogenics Engineering Conf., Aug. 10-14, 1981, San Diego, CA. Contact Dee Belsher, NBS, Boulder, CO 80303.

Magnetism Summer School, Aug. 9-29, 1981, Univ. of Dundee (see announcement).

COMPUMAG Conf. on the Computation of Magnetic Fields, Sept. 13-17, 1981, Chicago, Illinois. Contact R. D. Smith, 362/C-132, Argonne National Lab., Argonne, Illinois 60439.

MMM Conf., Nov. 10-13, 1981, Atlanta (see announcement).

4th Int. Conf. on Video & Data Recording, April 5-7, 1982, London (see announcement).

JOIN THE MAGNETICS SOCIETY TODAY

Membership in the IEEE Magnetics Society entitles you to receive, for the low Society fee, the IEEE Transactions on Magnetics, and the quarterly Magnetics Society Newsletter. You are kept informed of latest developments, meetings, and conferences in your areas of interest, and are entitled to purchase informative conference records and other helpful educational aids at greatly reduced rates for members.

Use the convenient coupon to become a member of the IEEE MAGNETICS Society. If you are not a member of the IEEE, but would like to join, please check the appropriate box on the coupon. Descriptive materials and an IEEE membership application will be sent to you upon receipt.

Society Fee: \$7.00 for IEEE members of all grades except Student.
Student Fee: \$3.00. These rates apply to payments received September 1 through February. On payments received March 1 through August 31, remit one-half of the above rates. (Payments received September 1 through December 31 apply through December 31 of the following year.)

MEMBERSHIP APPLICATION IEEE MAGNETICS SOCIETY

Send to: IEEE Service Center, 745 Hoes Lane,
Piscataway, NJ 08854.

_____ I am a _____ member of IEEE and hereby
Grade apply for membership in the
MAGNETICS Society. I
enclose a check for the Society Fee* (made
payable to IEEE).

_____ I am not a member of the IEEE but would like
to join. Please send information.

_____ I am interested in becoming a MAGNETICS Society
affiliate. Please send information.

Name _____ IEEE No. _____

Mailing Address _____

City _____ State/Country _____ Zip _____

Company _____

Field of Interest _____

(Please show this message to a colleague in magnetics who could benefit from membership in the Magnetics Society.)

JOIN THE MAGNETICS SOCIETY

If you are not yet a member of the IEEE Magnetism Society and are involved in magnetism research, development or engineering, the Society could make a valuable contribution to your professional activities.

You will join over 2000 colleagues in belonging to the only society in this country devoted solely to the interests of those who work in magnetism.

You will have the opportunity of contributing to your profession through membership in its Society and participation in the work of its technical and administrative committees.

You will receive quarterly the Magnetism Transactions-- recognized throughout the world as a leading publication in applied magnetism.

The Society sponsors the INTERMAG Conference and co-sponsors the Conference on Magnetism and Magnetic Materials, which jointly cover the whole subject of magnetism.

Fill out the application blank today. If you prefer, you may contact: E. J. Torok, Membership Chairman of the Magnetism Society, Sperry Univac, ULT25, P. O. Box 3525, St. Paul, Minn. 55165.



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