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RICHARD M. JOSEPHS, EDITOR • SPERRY UNIVAC • P.O. BOX 500 • BLUE BELL, PA 19424

THIRD JOINT INTERMAG-MAGNETISM AND MAGNETIC MATERIALS MONTREAL, PQ, CANADA JULY 20—23, 1982

The Third Joint Intermag - MMM Conference ($3IM^3$) will be held at the Hotel Sheraton - Mt. Royal, Montreal, Quebec, Canada, on July 20-23, 1982. This meeting combines the Twenty-Eighth Annual Conference on Magnetism and Magnetic Materials and the Intermag Conference, and it will be the only meeting of either of these major conferences during 1982. The Conference is jointly sponsored 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 Metallurgical Society of the AIME, and the American Society for Testing and Materials.

Members of the domestic and international science and engineering communities interested in recent developments in magnetism and its associated technologies are invited to attend the Conference and to contribute to the technical sessions. The deadline for abstracts is March 26, 1982. Details regarding abstract preparation are provided in the Call for Papers, available by contacting the Conference Chairman whose address is given below. The meeting will be open to all persons, subject to a registration fee of about $125 (US) with a marked reduction for students and retirees.

The scope of the Joint Conference embraces all areas of basic science, applied science and engineering in magnetism. These include experimental and theoretical research in magnetism, the properties and synthesis of new magnetic materials (including superconductors), new developments in applied magnetics (dc to microwave), information storage technology, magnetic separation, and applied superconductivity. The program will consist of invited and contributed papers, as well as workshop sessions. Some of the invited papers will be tutorial in nature, while others will review recent work in specialized fields.

Individuals who are not on the Conference mailing list (INTERMAG or MMM) may obtain general Conference information, as well as the Call for Papers, by contacting the Conference Chairman: P. E. Wigen, Physics Department, Ohio State University, Columbus, OH 43210, USA. The Program Committee is chaired by M. H. Kryder of Carnegie-Mellon University and Jill C. Bonner of the University of Rhode Island. The Local Chairman is A. Yelon of the Ecole Polytechnique, Montreal.

REPORT OF THE DIVISION IV DIRECTOR — ALLAN C. SCHELL

Money Matters -

At the last series of meetings of the TAB OpCom and the Board of Directors there was some action on the topic of administrative and accounting charges for the Groups and Societies. The TAB Directors agreed to an amount of $170K for 1982, with the proviso that $40K be returned to TAB for support of the membership development committee activities. This does not constitute a very large portion of the total charges (estimated at $675K) nor was there agreement on the method of allocation, either by item or by Society. However, it is the next step of a process that will affect Society finances. The 1982 impact on each Division IV Society will be in the range of $3K to $7K.

The Board of Directors voted to increase dues by $2, and to increase the assessment of U. S. members by $1 for USAB activities. The dues for U. S. student members were increased by $3 to cover the publication of a new student journal. Another financial change that affects student members of Societies is that the cost to a student member of any of the optional Society publications is 75% of the member price.

Members Matter -

Membership in the IEEE Societies is changing. The Computer Society is enjoying rapid growth, but the other twenty-nine Societies have increased on the average by less than one percent over last year, and fourteen Societies lost membership. Division IV is 35% larger than last year, but the variance and the low growth indicate that member recruitment needs more attention. One of the best opportunities for membership promotion is a symposium or conference. A successful technique is to offer a year's free membership in the Society to individuals who sign up at the meeting. Each of us needs to be a recruiter, to maintain and increase the member base for our technical activities.

At the annual meetings and symposia you can expect to see and hear more about the recent winners of major IEEE awards. The Board of Directors approved a procedure change by which the Societies will announce at their meetings the receipt of major IEEE awards by their members.

The IEEE Educational Activities Board has spent considerable time wrestling with the formulation of a position on engineering technology. There is confusion about these four year programs, the job market for their graduates, and what further educational opportunities are available after graduation. For example, a graduate of a technology program cannot, in general, enroll for an advanced engineering degree because of a lack of science-based courses in the undergraduate program.

At the August meeting, the Board of Directors adopted a position that supports efforts to reduce the confusion between engineering and technology programs, and recommends that technology programs not be accredited if they create the impression that they are equivalent to engineering programs. A series of procedures were adopted to implement this position.

The Institute position is not intended to deprecate technology programs or the recipients of technology degrees. The IEEE welcomes and supports a membership encompassing a wide range of academic training. Trying to rule on whose degree is "better" is a futile exercise, as an examination of the educational backgrounds of the major contributors to electrical engineering progress will show. However, reducing the confusion with respect to alternative programs is a worthy goal, especially for students who may be misled in their career paths.

Centennial -

The IEEE will celebrate its Centennial in 1984, and a series of special activities are planned for that year. All Societies are encouraged to prepare a special Centennial issue of their Transactions, and to develop a Centennial program for their major conference. This will be an opportunity to gain a perspective of where we've come from, a view of who we are, and a vision of where we're going.

SESSION SUMMARIES, 1981 MMM CONF., NOV. 10—13, ATLANTA

A number of the session chairmen have kindly provided the following summaries of their respective sessions.

Session # AA1. BUBBLE MATERIALS. M. H. Randles.

L. C. Luther (paper AA-2) and R. C. LeCraw in a companion paper (AA-3) reported on an improved Ca-Si substituted BiYIG composition for one-micron bubbles. The films feature narrow FMR linewidths, high Faraday contrast, low coercivity, high Q, plus an improved temperature dependence of -0.22%/degree for the collapse field. In addition the change in l-value with temperature has half the magnitude and the opposite sign compared to a typical $(YSmLuCa)_3(FeGe)_5O_{12}$ material. D. J. Breed (AA-4) reported a one-half micron composition of $(BiLuY)_3Fe_5O_{12}$ realized on a NdGG substrate. The maximum anisotropy was 1.5 x 10^5 erg cm^{-3} with a mobility of 600 m sec^{-1} Oe^{-1}. P. Feldmann (AA-6) concluded from anisotropic Faraday rotation data that $Er_{2.2}Y_{0.8}Fe_5O_{12}$ is non-cubic below its compensation temperature. D. M. Gualtieri (AA-7) through careful measurements of the segregation coefficients K_R^0 of the rare earths in iron garnet films found a strong correlation between K_R^0 and the partial molar heat of mixing of the R_2O_3 oxide and flux, as calculated from regular solution theory. E. M. Gyorgy (AA-8) reported that Ku can be annealed out rapidly in garnet films doped with uncompensated Si, Ge, or Ca, possibly due to cation migration aided by Fe^{2+} or Fe^{4+}. A. Paoletti (AA-9) studied the changes in magnetic circular dichroism as a function of annealing in Ca-doped YIG and concluded that two types of Fe^{4+} centers exist. M. A. Anderson (AA-10) concluded that oxygen diffusion through the ion implanted layer to the Al-Cu metal layer was responsible for observed changes in the bubble film's magnetic properties. D. A. Herman (AA-11) reported that laser annealing at oxygen pressures up to 5 atmospheres is an effective way to redistribute the Ga on Fe sites, resulting in higher $4\pi Ms$ and a 50% higher mobility.

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.

Session # DC. EXOTIC, NEARLY INTEGRAL VALENT COMPOUNDS. S. M. Shapiro.

This session consisted of four experimental invited papers on Ce compounds which demonstrated that Ce with its single f level exhibits truly unusual magnetic properties. $CeCu_2Si_2$ is superconducting at low temperatures (T_c = 0.5K) whereas $CeAl_2$ orders in a modulated antiferromagnetic structure at T_N = 3.5K. $CeAl_3$ exhibits neither superconductivity nor magnetic ordering, but experimentally at temperatures $T < 1K$ looks remarkably like He^3. These Ce compounds are very dependent on stoichiometry and their properties can easily be changed by alloying. The four contributed papers dealt with the theoretical aspects of systems with localized f electrons strongly interacting with the band-like conduction electrons. One calculation showed that as a result of satisfying the Friedel sum rule there appears a many-body resonance at the Fermi level.

Session # DP (Poster). SELECTED TOPICS IN MAGNETISM. J. J. Krebs.

The low temperature specific heat and susceptibility of antiferromagnetic Ni $(glycine)_2 \cdot 2H_2O$ were reported and discussed as were some universal features of the differential susceptibility of $TTF\text{-}AuS_4C_4$ and related spin-Peierls compounds. The pseudo-1-D magnetic compound $CuCl_2 \cdot DMSO$ and the 2-D compound $(C_6H_5NH_3)_2CuCl_4$ were both studied by magnetic resonance. The Mössbauer technique was used to probe the Fe and Co compounds formed during catalysis on zeolite supports and also to demonstrate surface-induced non-collinearity in small CrO_2 particles. The critical behavior of VPt_3 alloys shows good agreement with theory. Two papers discussed the theoretical behavior of systems with competing alignment mechanisms. A total of five papers discussed technical magnetization processes. They included discussion of the bulged wall globus model as well as models for Barkhausen coercivity and energy loss and eddy current losses.

Session # ED. NEW TECHNIQUES, NEW MATERIALS. A. H. Morrish.

Although a variety of subjects were presented, a large portion of the audience stayed for the entire session, and the discussions during the question periods were lively and extensive. R. R. Frankel (MIT) has extended his northern hemisphere studies on magnetic bacteria to the equatorial region and the southern hemisphere. Bacteria sense the geomagnetic inclination, and tend to swim downwards. As a result, the polarity of the magnetite particles in the bacteria have opposite polarities with respect to the flagellum (tails that propel the bacteria) in the two hemispheres. At the equator, roughly equal numbers of the two polarities are found.

I. S. Jacobs (GE, Schenectady) reported on the use of microwave radiation (at 0.92 and 2.45 GHz) to convert part of the pyrites (FeS_2) in coal to magnetic pyrrhotite ($Fe_{1-x}S$). Then magnetic separation improves the desulfurization process, a current environmental worry.

The change in remanent magnetization of magnetostrictive materials when two successive bursts of ultrasound are applied in the presence of different static magnetic fields was determined by C. Winter and A. S. Arrott (Vancouver). Both a soft ($Tb_{0.27}Dy_{0.73}Fe_2$) and a hard (MnBi) material exhibit the effect, but it is much larger in the rare earth-iron alloy. It was no surprise to learn that a modified Preisach model can describe the data.

Three papers were given on magnetic fluids. D. Y. Chung (Howard U) described ultrasound measurements on suspended magnetic particles in a liquid metal (Hg). A computer simulation of agglommeration in fluids with various sized magnetic particles was carried out by R. W. Chantrell (England), A Bradbury, J. Popplewell and S. W. Charles (Wales). The influence on magnetization was presented, and it seems that other properties can be calculated. Quite a different topic was described in the third paper. R. Meservey, P. M. Tedrow, J. S. Brooks and G. O. Zimmerman (Boston) have updated the Quinke method by measuring the height difference in a manonometer via capacity measurements. The technique was used to determine the susceptibility of liquid ^3He.

There were two papers on thin films. L. N. Mulay (Penn State) described successful methods for the production of single iron-nitride phases. Various techniques (magnetization, Mössbauer, SEM) were used to characterize the morphology of the film grains. N. Naoe, Y. Hoski and S. Yanamaka (TIT, Tokyo) have succeeded in making thin films of FeO_x ($1.34<x<1.5$) by sputtering in water vapor. Some of the magnetic properties were described.

Finally, graphite intercalated with $FeCl_3$ and $NiCl_2$ have been investigated by M. B. Alexander, D. G. Onn (Delaware), J. J. Ritsko (Xerox) and S. Flandrois (Bordeau). Of special interest were specific heat measurements.

Session # FA. ITINERANT MAGNETISM. J. Callaway.

An important development relative to our understanding of the band structure and Fermi surface of nickel is contained in the report of C. J. Tung, I. Said, and G. E. Everett (U. Calif., Riverside) concerning measurements of the magnetic anisotropy of nickel.

These authors find the angular dependence of the anisotropy to contain terms indicating the presence of a small hole pocket near the zone face, relating to the state $X_{2\downarrow}$ (previously reported by Gersdorf, Phys. Rev. Letts. 40, 344 , 1978). The presence of this pocket has been a nearly universal prediction of first principles band calculations. It had, however, not been observed in De Haas-van Alphen effect measurements. G. G. Lonzarich, T. I. Sigfuson (Cavendish Laboratory, Cambridge), J. J. M. Buiting (Nigmegen), J. Kubler (Darmstadt) and F. M. Mueller (Nigmegen) reported observation of the de Haas-van Alphen effect in the weak itinerant ferromagnet Ni_3Al. The surfaces involved appear to be light hole pockets around the zone center Γ , and X centered hole necks. The measurements are fit by calculations that contain a rigid exchange splitting of paramagnetic d bands of about 4×10^{-3} Ry. The material appears to be quite homogenous; no indications of large clustering effects were observed in the (low) temperature range of the measurements. D. Pescia and F. Meier (ETH Zurich) described the use of spin polarized photoemission using circularly polarized light to determine band energies in a non-magnetic metal (gold). Interband transitions are induced which involve differing proportions of up and down spin electrons in the final state. If this state is above the vacuum level, the excited electrons may escape and their polarization can be measured. The results are interpreted on the basis of band models. The effect requires significant spin orbit interactions in the band structure, and therefore is in effect restricted to high Z materials.

Session # FE. SOFT MAGNETIC MATERIALS.

D. R. Thornburg.

Iuchi et al of Nippon Steel described core loss reduction of high permeability oriented silicon steel by laser scribing with Ruby or YAG optical lasers. The laser irradiation reduced the 180° wall spacing thus lowering the core loss more than 10% under optimum conditions. After irradiation, a recoating operation is necessary since the laser scribing blows off the surface layer of the steel. Nippon plans to produce 300 tons/month of laser scribed material in 1982.

Foster of Westinghouse R&D described the role of residual sulfur on reducing core loss in (110) 001 oriented steels by the application of tensile stress. Oriented specimens produced by both primary and secondary recrystallization showed the effect. The losses and coercive force of those specimens containing residual sulfur could be lowered by the application of tensile stress, those specimens without residual sulfur levels did not show any change in loss or coercive force with stress. He attributed this effect to improved domain processes.

Littmann of Armco, Inc. described the core loss of regular grain oriented (RGO) silicon steel (over a thickness range of 6 to 14 mils) at induction levels of 1.0 to 1.7 T and the core losses of high-permeability grain-oriented (HGO) steel from 8 to 16 mils thickness and inductions of 1.0 to 1.7 T. He used those data with current loss evaluations to determine the cost of transformer ownership. When the transformer design inductions are 1.5 T or less and loss evaluations are $2.50/W or more, transformers built with 9 mil RGO will have a lower cost of ownership than either 11 mil RGO or 12 mil HGO. He also concluded that in larger transformers, with higher design inductions, HGO materials provide lowest cost of ownership.

Lyudkovsky et al of Inland Steel discussed the role of annealing conditions on the internal oxidation and magnetic properties of Si-Al containing low carbon electrical steels. They established a relationship between subscale thickness, annealing time, and effective oxygen potential of the decarburizing atmosphere of the Si-Al containing steels and found that internal oxidation reduces 1.5 T permeability 50 G/Oe per 1 μm of internal oxide thickness, while core loss was almost unchanged.

Tsuya et al of Tohoku University described the annealing response of rapidly quenched Sendust alloy ribbon. They found that the lowest coercive force of 8 mOe was obtained by vacuum annealing for 30 minutes at 1040°C, cooling at 60°C/h to 550°C, and air cooled. The decrease in coercive force seemed closely related to the formation of a DO_3 ordered structure in the Sendust alloy.

A paper by van den Berg et al of Delft University described the formation of free wall clusters in soft ferromagnetic layers. They applied the cluster concept to 3500 Å thick permalloy layers.

Pascard et al of E. R. Materiaux Magnetiques described the role of exchange striction and crystal lattice energy in domains and domain walls in ferromagnetic materials. A model was developed, which included crystal lattice energy and exchange striction, and compared to single and polycrystalline ferrimagnets.

Plaskett et al discussed the synthesis of Mn-Zn ferrite from Na_2O:x B_2O_3 under CO_2-CO ambients. Mn-Zn ferrite was precipitated from a Na_2O:x B_2O_3 $(1.3 \leq x \leq 2)$ flux under an ambient of 0.06 to 1% CO in CO_2. The composition of the ferrite obtained by this method varied from $MN_{0.44}Z_{.40}Fe_{2.16}O_4$ to $Mn_{.09}Zn_{.06}Fe_{2.85}O_4$.

Patton et al discussed the magnetic properties of Li-Zn ferrites. They were especially interested in understanding the spin-canting phenomena observed with Zn additions above $x \cong 0.3$.

A paper by Young and Schenk described iron losses in Turbogenerator teeth. They measured flux densities in a typical tooth of a 500 MVA synchronous generator. Peak flux densities of 14.3, 16.9, and 21.2 kG in an open circuit test at 80, 100, and 125% of rated voltage. The voltages were rich in odd harmonics and tended toward a square wave. These voltages and waveforms were reproduced in an Epstein frame using three generator materials, non-oriented, oriented, and cube textured 3% Si-steels. The losses with generator waveform were lower than sinusoidal waveform, with all three materials. The less oriented the material the greater the relative decrease in losses.

Session # GC. CRITICAL PHENOMENA. Per Bak.

Y. Shapira (MIT) reported conclusive evidence for the existence of a Lifshitz point in MnP. A Lifshitz point separates three phases: a paramagnetic phase, a ferromagnetic phase and a modulated phase characterized by a wave vector g which goes continuously to zero at the Lifshitz point. Until now the Lifshitz point, originally suggested by Hornreich, Luban, and Shtrikmann at the Weizmann Institute, has existed only in the theorists' minds, and an extensive literature on the theoretical aspects has been published. In this light, the discovery of the Lifshitz point in MnP is very important. Some critical exponents have already been measured by Shapira and coworkers and found in good agreement with theory. R. H. Swendsen (IBM Zurich) gave a review on his Monte-Carlo-Renormalization group (MCRG) method which combined Monte-Carlo methods with real-space-renormalization-group methods. The formalism has been demonstrated to produce accurate results with an efficient use of computer time. Swendson's method has proven an important tool in the calculation and understanding of critical properties of several models of current interest. Recently, field-theorists have applied Swendson's MCRG method to models of great interest in particle physics (Wilson et al). The critical behaviour of random field Ising models has attracted much theoretical interest recently. Two papers were concerned with this subject. Rasmussen, Novotny, and Landau (University of Georgia, Athens) applied the MCRG method to the problem and found that the critical behavious in two and three dimensions was close to that of the pure Ising models, in disagreement with a very recent theory by Pytte, Immy, and Makamel (IBM) predicting that there should be no phase transition. Shapira reported experiments on the "random Ising system" $Mn_xZn_{1-x}F_2$. Aharony and Fishman (University of Tel Aviv) have shown that the effects of a uniform field on a random Ising antiferromagnet (such as $Mn_xZn_{1-x}F_2$) is equivalent to those of a random magnetic field on a ferromagnet. Shapira found that at high fields the transition becomes rounded, which is consistent with the theory of Pytte, Imny, and Makamel.

APRIL DEADLINE IS SET FOR FELLOW NOMINATIONS

The deadline for Fellow grade nominations to be considered by the 1982 Fellow Committee is April 30, 1982.

The IEEE Bylaws define the Fellow grade as one of unusual professional distinction to be conferred only by invitation of the Board of Directors upon a person of outstanding qualifications and extraordinary experience in the fields of electrical engineering, electronics, computer engineering and computer sciences, and the allied branches of engineering and related arts and sciences, and who has made important individual contributions to one or more of these fields. A nominee must be a Senior Member of the Institute, and have been a member in any grade for at least five years prior to January 1 of the year of election.

The Fellow Committee bases its evaluation on the nominee's showing in each of the following eight categories. Listed in the approximate order of importance, these are:

1. Individual contributions as Engineer/Scientist/ Originator, Technical Leader, or Educator;
2. Evaluation by an IEEE Society (or more than one of them);
3. Tangible and verifiable evidence of technical accomplishment such as technical publications, patents, reports or published descriptions of products, facilities and/or services performed;
4. Confidential opinions of Fellow references who know of the work of the candidate personally (where possible, these should be associated with other than the candidate's own organization);
5. Service to IEEE (and AIEE and IRE);
6. Professional engineering service other than IEEE;
7. Opinions of endorsers, and
8. Total years in the profession.

Selections, based on the consensus of committee judgments, are submitted to the Board of Directors for consideration and election. Fellows elected for 1982 will be announced in December, 1982.

The Nomination Form has been revised; only the new Nomination Form having the year code "1982" will be accepted by the Fellow Committee. The nomination kit may be used for new submissions as well as re-submission of nominations.

All members are encouraged to actively participate in the nominating process. The new kits are available upon request to the Staff Secretary, IEEE Fellow Committee, 345 East 47 Street, New York, NY 10017.

COMMITTEE FOR THE PRESERVATION OF SOUND RECORDINGS

The Committee for the Preservation of Sound Recordings is asking for the participation of persons interested in the general question and, specifically, in the use of magnetic recordings as sound records, the recommendations for storage environments and techniques of surveillance. The group is working from the recommendations for further study in A. G. Pickett and M. M. Lemcoe's PRESERVATION AND STORAGE OF SOUND RECORDINGS (Washington: Library of Congress, 1959) and in N. Bertram and A. Eshel's RECORDING MEDIA ARCHIVAL ATTRIBUTES (MAGNETIC) (Redwood City: Ampex Corp., 1979).

In addition to the librarians, audio archivists and curators, we are seeking the contributions of those learned in:

- Engineering mechanics with especial understanding of the behavior of polymeric and composite materials and plastic analysis.
- Organic chemistry with background in polymer compounding and manufacturing processes.
- Microbiologist knowledgeable in the degradation of materials and mycology.
- Electronic sciences particularly skilled in instrumentation and analogues.

For further information, contact Mary Roos, 4317 Barrington Road, Baltimore, MD 21229.

BILL FIELD PASSES AWAY

Bill Field, a member of the Electronics Transformers Technical Committee, almost since its inception, and an important contributor to many of its standards, died recently. Bill had been retired from Sperry Univac for a number of years and had been a consultant to several companies specializing in solenoid devices.

SHORT COURSE ON USE OF LINEAR ACTUATORS IN DISK DRIVES

A two-day short course on The Magnetics & Control of The Linear Actuator As Applied to The Disk File will be offered Jan. 11-12, 1982 at the Sheraton River House, 3900 NW 21st St., Miami, Florida 33412.

The design of a linear actuator for use in a disk drive system is not widely understood. Often these techniques are not found in either electrical or mechanical engineering school curricula and must be learned elsewhere. The advent of new permanent magnet materials is necessitating new linear actuator designs. Tomorrow's disk drives are being designed and developed to meet least cost and greater speed requirements. New head positioning control schemes are appearing.

The objective of this seminar is to provide an introduction to the complete design and control of a linear actuator. Emphasis will be on electromechanical theory, control theory and practical design techniques.

For further information, contact:

J. Arthur Wagner
Electrical Engineering Department
San Jose State University
San Jose, California 95192
(408) 277-3704 (office)
(408) 277-2452 (message)

Ed. note: The announcement for this course arrived too late to be effectively publicized in this Newsletter. However, there is probably sufficient member interest within the Magnetics Society to warrant additional offerings of the course. If you are interested in taking this course in the future, contact Art Wagner at the above address.

1982 APPLIED SUPERCONDUCTIVITY CONF., HYATT REGENCY — KNOXVILLE, TENN., NOVEMBER 30 TO DECEMBER 3, 1982

The Biennial Applied Superconductivity Conference provides workers in the field with the opportunity to meet with colleagues and discuss the major topics in their areas of interest. The 1982 Conference, which will include both oral and poster sessions, will have nine subject categories:

1. Superconducting cables, motors and generators (including utility machines), transformers, and other electric power devices.

2. High energy physics applications of superconductivity.

3. Fusion systems and other large superconducting magnets (MHD, SMES, etc.).

4. New applications of superconducting magnets, e.g., biomedical NMR and mass spectrometry.

5. High T_c superconducting materials and applications.

6. Composite conductor stability and ac losses.

7. Microwatt logic and memory devices.

8. Microwatt high frequency devices and SQUIDS.

9. Miscellaneous.

The Proceedings of the Conference will be published in the IEEE Transactions on Magnetics. Authors whose papers are accepted will receive material and instructions for preparing camera-ready manuscripts so the papers can be directly reproduced. Camera-ready copy must be submitted upon arrival at the Conference.

Inquiries of a general nature should be addressed to the Conference Chairman:

Martin S. Lubell
Oak Ridge National Laboratory
P. O. Box Y, Bldg. 9204-1
Oak Ridge, TN 37830
(615) 547-1451

THIRD INTERNATIONAL CONFERENCE ON MAGNETIC FLUIDS JUNE 28TH—30TH, 1983 UNIVERSITY COLLEGE OF NORTH WALES, BANGOR

The conference will cover the preparation, properties and applications of magnetic fluids.

The organisers wish to encourage the showing of industrial exhibits, demonstrations and films at the conference which illustrate the properties of magnetic fluids and their use in devices.

The program is expected to include papers on

I. Magnetic Fluid Theory
Statistical Thermomechanics
Magnetic Fluids as a multi-component medium

II. Magnetic Fluid Experiments and Measurements
Hydrodynamic surface and volume wave instabilities and dynamics
Bulk Flow
Levitation
Magnetic measurements

III. Magnetic Fluid Physiochemistry
Fluid preparation, metallic magnetic fluids colloidal properties, particle size distributions
Acoustic, optical and electrical properties

IV. Magnetic Fluid Hydrodynamics
Ferrohydrodynamics
Interfacial and bulk waves
Non-linear waves and instabilities

V. Magnetic Fluid Thermomechanics
Heat Pipes, heat engines, energy conversion
Thermodynamics

VI. Applications
Seals, bearings, dampers etc.
Separation
Displays
Biological and medical applications
Inks and magnetic printing

Papers will be reviewed for publication and the proceedings of the conference published.

For additional information, contact the co-chairmen, Drs. J. Popplewell and S. W. Charles, School of Physical and Molecular Sciences, University College of North Wales, Bangor, Gwynedd, U. K. LL57 2UW.

CONFERENCE CALENDAR

4th Int. Conf. On Video & Data Recording, April 5-7, 1982, London.

1982 Power Electronics Specialists Conf., M. I. T., June 15-17, 1982.

3rd Joint Intermag-MMM Conf., July 20-23, 1982, Montreal (see announcement).

10th Int. Colloquium On Magnetic Films & Surfaces, Yokohama, Sept. 13-16, 1982.

1982 Applied Superconductivity Conf., Nov. 30-Dec. 3, Knoxville, Tenn. (see announcement).

3rd Int. Conf. on Mag. Fluids, June 28-30, 1983, Univ. College of North Wales, Bangor (see announcement).

IEEE SHORT COURSE ON FINITE ELEMENTS IN ELECTRICAL ENGINEERING, MARCH 14—17, 1982, PITTSBURGH

Introduction:

Quite a few courses are offered on the general subject of Finite Elements, perhaps none adopt points of view that make them suitable for electrical engineers.

Who Should Attend:

This course will benefit engineers or managers who are involved in the numerical solution of electromagnetic field problems. It will enable the participant to specify problems in optimum manner, to evaluate various codes available for the type of problems, and to intelligently discuss or formulate problem solving approaches with consultants.

Prerequisite:

This course is aimed at electrical engineers in professional practice, and is intended to be for Finite Elements users rather than creators of new methods. It is expected that the participants in this course have completed the usual introductory undergraduate courses in magnetics, are conversant with simple matrix algebra and a few rudiments of numerical analysis, and are able to read and write simple programs in Fortran or some other high level programming language.

Instructor:

T. T. Sylvester, Ph. D., is an internationally acclaimed pioneer in the application of Finite Element techniques in electrical engineering. He is a professor in electrical engineering at McGill University, Montreal, Canada and heads the Finite Elements/ Computer Graphics Group in the Department.

Course Matter:

All participants will receive course notes and other material for study and future reference prepared by Professor Sylvester.

Tuition:

The fee for this course is $550 U. S. dollars (for IEEE members only) and $600 U. S. dollars (for non-IEEE members). Full-time university students who are IEEE members, please contact course director for reduced rate registration.

Registration:

Since the number of participants will be limited, registration is available on a first come, first served basis. Please mail your registration with the tuition (checks to be made payable to IEEE Pittsburgh Section) to:

Robert M. DelVecchio
Westinghouse R&D Center
1310 Beulah Road
Pittsburgh, PA 15235
412-256-3667

The course will be held at the Marriott Hotel, 101 Mall Boulevard, Monroeville Mall, Monroeville, PA 15146, 412-373-7300.

Course Director:

Questions pertaining to the course content and student registration may be directed to the course director at the address below:

Shankar T. Lakhavani
Westinghouse R&D Center
1310 Beulah Road
Pittsburgh, PA 15235
412-256-3875

E. ALLEN NESBITT DIES

E. Allen Nesbitt, known for his many contributions to the field of magnetism, died July 11, 1981.

It is difficult to summarize the many accomplishments of his long career during which he specialized in research on magnetism. Although he made many contributions to the understanding of soft magnetic materials, his primary interest was in permanent magnet material which has found wide application in hysteresis motors and airborne recorders. Most of the understanding of the origin of the coercive force of the Alnico alloys originates from his work. He contributed substantially to the development and understanding of rare earth cobalt permanent magnets which have the highest energy product available today.

Much of his time at Bell Labs was spent in a group studying magnetic materials. At various times R. M. Bozorth, C. Kittel, W. Shockley and H. J. Williams were members of this group. In the history of magnetism, it was a period marked by new materials, new experiments, and a great deal of new insight. In this climate Mr. Nesbitt contributed much new understanding, and made important contributions in identifying which of the new materials would be of technological use.

Mr. Nesbitt was born in Brooklyn, NY in 1908. He received his B.S. degree from the Polytechnic Institute of Brooklyn where he taught courses in magnetism. During World War II he worked on magnetic materials for the Office of Scientific Research and for the Naval Ordnance Laboratory. He was awarded twenty-six patents and was the author of more than a hundred papers. He also was the author of "Ferromagnetic Domains", a book widely used in secondary school physics classes and coauthor of "Rare Earth Permanent Magnets." He was a member of the American Physical Society, the American Institute of Metallurgical Engineers and the American Society for Metals. After retiring from Bell Labs with forty-nine years of service, he consulted with the Allied Chemical Corp. until his death.

No account of Mr. Nesbitt, "Nez", would be complete without mentioning his extraordinary ability to inspire and help younger colleagues and co-workers. He was generous with his time and many of us profited from his vast experience and background in the field of magnetism. He was always pleasant and his enthusiasm was contagious.

G. Y. Chin

J. F. Dillon, Jr.

E. M. Gyorgy

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