

CMRR Report

Volume I



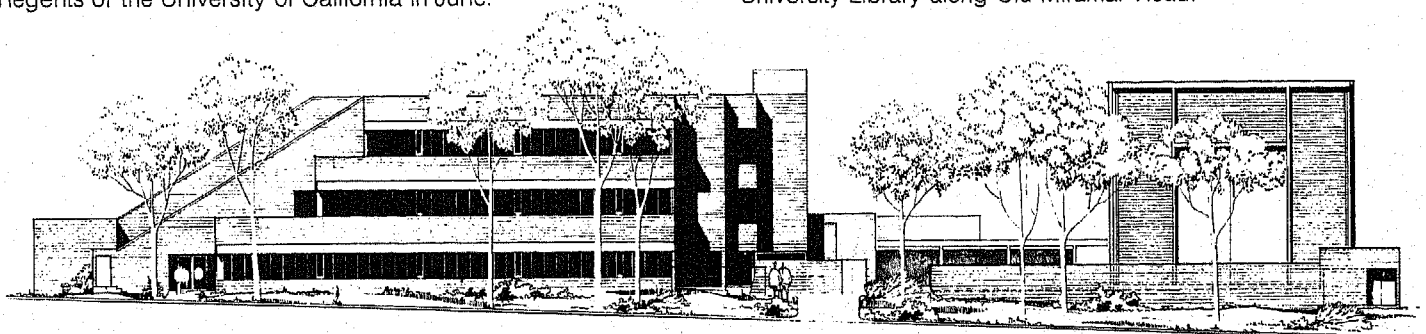
Participating in the groundbreaking ceremony were: Chancellor Richard C. Atkinson, Assemblywoman Lucy Killea, Judge James Focht, Dean M. Lea Rudee, William C. Martin, Turnkey Construction, Dr. Paul Frank.

Groundbreaking Ceremony for CMRR Held

A Groundbreaking Ceremony for the Center for Magnetic Recording Research (and a Structures Laboratory, which was bid as part of the same project) was held on Friday, August 3. San Diego political leaders, representatives of the UCSD Administration, and officials of Turnkey Design & Construction Company, which won the design and build competition, and over 150 guests were present. Dr. Paul Frank, Vice President of Research & Development for Applied Magnetics Corporation, spoke on behalf of the sponsoring companies.

At a reception following the ceremony, a model of the three-story stepped back pyramid-style concrete block and bronze glass structure, designed by Leonard Veitzer, AIA, was displayed. The winning design, chosen by a complex system of assigning quality points, was approved at a meeting of the Regents of the University of California in June.

Charles B. Powers, Assistant Vice Chancellor of Facilities Design & Construction, stated that the CMRR design happened to be the highest rated design of any competition conducted by UCSD. "Turnkey/Veitzer was very responsive to the complicated technical requirements of the Magnetic Recording Research building, and it is the best-designed building for the budget we have seen in some time," said Powers. When completed in summer 1985, the Center will contain 44,000 gross square feet and 26,700 assignable square feet. It will include fifty-four laboratory modules and forty offices, an outdoor terraced deck, a director's suite and conference room, an information center and flexible meeting space which will hold up to 100 persons. The new facility will be located in a eucalyptus grove to the east of the Central University Library along Old Miramar Road.





From the Director

It is my pleasure to welcome you to the first issue of "CMRR Report", a quarterly newsletter. In this column, I intend to give an overview of CMRR activities. I was appointed the director of CMRR on 1 September after a twenty-three year career at Ampex studying the theory of magnetic recording. It follows that most of this report concerns the work of my predecessor Al Hoagland, Jim Lemke, Kitty Morris and others. Al, who is now with the University of

Santa Clara, and Jim, who remains with Eastman Kodak, are to be congratulated on their enormously successful CMRR fund raising activities; almost \$9 million has now been pledged by twelve companies. A vast amount of effort also went into the design of the Center's permanent home, a \$5.1 million, fifty-four laboratory, forty office structure, described elsewhere in this newsletter, which will be completed and occupied by fall '85. Staffing has proceeded; Dawn Talbot, our librarian, and Hyong Ossi, our electronics technician, started work on 1 October and 1 November respectively. The first of our four endowed professors, Dr. Jack Wolf, University of Massachusetts, will be here on 1 January. Jack is an internationally famous specialist in information and communication theory with some 100 papers published. Experts in the fields of magnetic recording theory, applied mechanics and tribology, and magnetic materials are being sought for the remaining appointments. Upon my arrival at CMRR I decided that, with all these achievements in hand, my principal emphasis should be in the development of personal contacts with university faculty. To that end, I have visited all but one of twelve individuals involved in the research proposals currently funded, am giving a series of seminars in physics and will offer a course, "Theory of Magnetic Recording", in EE&CS in the spring quarter. As many of you know, I have been fascinated by most of the intellectual challenges in understanding magnetic recording for almost a quarter of a century. It is difficult to express my excitement at the present opportunity to interest some of the nation's best minds in these challenges.

—John C. Mallinson

From the Dean

Although its science and applied science efforts date from the days of its founding, UCSD's Division of Engineering is but two years old. One purpose in founding the Division was to foster closer interaction with industry. CMRR is an important institution for us since it sets a high standard for UCSD. Indeed some believe it to be an

archetype for future university/industry ventures in the nation. It has been quite remarkable to see Jim Lemke and now John Mallinson proselytize faculty members on behalf of the magnetic recording industry. It is my hope that as the Center continues to grow, it will play an increasing role in the development of UCSD. It is especially exciting to see this activity in an area of technology that has not been accorded the recognition it deserves by American higher education. I regard my involvement in establishing the Center as a high point in my UCSD experience, and look forward to working with the Center in the future.

—Lea Rudee

CENTER FOR MAGNETIC
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Director John C. Mallinson
Editor Dawn E. Talbot
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Center Funds First Research Projects

The Center is committed to taking a UC systemwide approach to the encouragement and support of research in magnetic recording. To that end, the Center has begun a program of research support. Faculty members of all campuses of the University of California have been encouraged to undertake research in the field of magnetic recording. The Center has now made a number of awards in its program of support for research directly relevant to magnetic recording. Referees are chosen from among technical and scientific leaders in the Center's sponsoring companies and on the university faculty. Final decisions on funding are made by the CMRR executive committee.

Research proposals which have been funded to date are:

Professor Johann Oesterreicher, Dept. of Chemistry, UCSD.

Materials for Magnetic Recording

Professor Harry Suhl, Institute of Pure & Applied Sciences, UCSD.

Dynamics of the Magnetization and Magnetic Noise

Professor David Bogoy, Mechanical Engineering, UCB.

Mechanical Analysis of the Head/Disk Interface in Magnetic Recording

Professor Manuel Rotenberg, Electrical Engineering & Computer Sciences, UCSD.

Aerodynamics of Recording Heads in an Environment of Large Knudsen Numbers

Professor Fred T. Parker, Department of Chemistry, UCSD.

Mossbauer Spectroscopy on Materials for Magnetic Recording

Dr. Sheldon Schultz, Dr. Donald R. Fredkin, & Dr. Saul B. Oseroff, Department of Physics, UCSD.

Research on Problems in Magnetic Recording

Professor Stanley Middleman, Applied Mechanics & Engineering Sciences, UCSD.

Fluid Management Techniques for the Creation of Magnetic Recording Media

CMRR Executive Committee

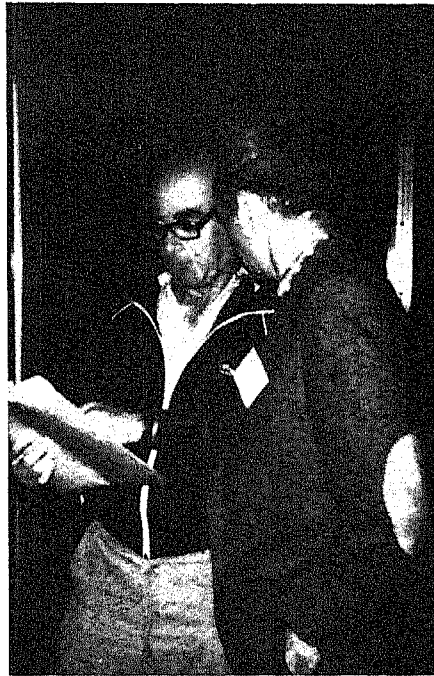
The charge to the CMRR executive committee is "to formalize the decision-making process on matters related to the Center, and to provide general supervisory responsibilities, advice about major policy matters, and approval for major operational changes . . ." Current members include:

Dean Lea Rudee, Chairman
Professor Paul Libby, Applied
Mechanics & Engineering Sciences
Professor Huey-Lin Luo, Electrical
Engineering & Computer Sciences
Mr. John C. Mallinson, Center for
Magnetic Recording Research
Professor Johann Oesterreicher,
Chemistry
Professor Harry Suhl, Physics

Dr. Shtrikman—Visiting Distinguished Scientist

Dr. Shmuel Shtrikman's arrival at UCSD as a CMRR visiting scholar coincided with the establishment of the Center. UCSD is fortunate to have attracted a scientist of Dr. Shtrikman's renown in magnetics to the nascent research center. Dr. Shtrikman, who has published more than 180 papers in various areas of pure and applied physics, provided an intellectual focus for the development of the Center and its programs of research. His role has been to advise on the development of the Center in its important formative stages.

Dr. Shtrikman, who received his D.Sc. in Electrical Engineering from the Technion, Haifa, was on leave from the Weizmann Institute of Science in Rehovot, Israel where he is the Samuel Sebba Professor of Applied Physics. In addition to his tenure at the Weizmann Institute, Dr. Shtrikman has held a number of prestigious appointments abroad—at London's Imperial College of Science and Technology, and the Franklin Institute. He was also named National Science Foundation Senior Foreign Scientist Fellow and Visiting



Dr. Shtrikman speaks with Prof. Manuel Rotenberg at a recent seminar.

Professor at the University of Pennsylvania. Dr. Shtrikman has received a number of awards, including the Weizmann Prize for Science by Tel-Aviv municipality in 1968 and the Michael Landau prize of the Mifal Hapayis Foundation in 1975. He is a Fellow of the IEEE and of the American Physical Society.

Shtrikman's contributions to the science and technology of magnetics are of breadth and depth too extensive to cover here. Much of his early work addressed the magnetics of small particles, powders and crystals. More recently, he has investigated various applications of permanent magnets. While visiting at the Center, Dr. Shtrikman addressed a variety of problems relating to magnetic recording, including magnetization processes, noise, and perpendicular recording.

Dr. Shtrikman returned to Israel in June but continues to maintain his close association with the Center. He again visited the Center for a brief period in September. Dr. Shtrikman has recently been appointed as an adjunct professor in the Department of Physics at UCSD.

Information Center

A proposal by Beverlee French, head of the Science and Engineering Library at UCSD, for the establishment of an Information Center at CMRR, was accepted by the Executive and Advisory Councils. A librarian/information manager, Dawn Talbot, has been appointed and took up her position October 1. Ms. Talbot was formerly Head of the Biological Sciences Library at the University of Sydney, Australia.

The Information Center will ultimately provide a highly specialized and active information service. Emphasis will be on service, and our goal will be to assure comprehensive and international access to materials and information in magnetic recording. The Information Center is committed to the concept of open information exchange while maintaining individual confidentiality.

Immediate plans for the Information Center are the identification and procurement of a core collection of monographs and journals in the magnetic recording area. Concurrently, investigations are being made into establishing a data base of magnetic recording information. Discussions as to the type of material which will be included and access to the data base are taking place. A small advisory group to look into this area is being established, and will reflect the interests of faculty and corporate sponsors.

Future areas which will be investigated by the Information Center manager include the provision of translated reprints, particularly of Japanese material, and access to patent literature. The Information Center hopes to act as a neutral clearinghouse for declassified internal company reports deposited with the Center. This information would be available to corporate sponsors only.

If you have any ideas as to how the Information Center may help with access to information which is currently difficult to obtain, please call Dawn Talbot (619) 452-6213 or write to the Center for Magnetic Recording Research, S-008, UCSD, La Jolla, CA 92093. We are anxious to find out what information needs you have, especially those which are not being met through your present information channels. The demands of the faculty, researchers and industrial supporters will determine the direction of the Information Center. The Information Center will be accessible to any researcher requiring information.

CMRR Advisory Council Named

An Industrial Advisory Council has been established to assure close communication between the Center and its industrial supporters. The Council is appointed by the chancellor of the university and consists of one representative from each company that supports the Center with \$300,000 or more during a three-year period. It will include eventually members from academic departments and government laboratories. The current members are:

- Mr. John C. Mallinson, Chairman
- Mr. J. P. Bartels, Pfizer, New York City
- Dr. Geoffrey Bate, Verbatim, Sunnyvale
- Dr. Paul Frank, Applied Magnetics, Goleta
- Mr. H. H. Georgens, Data Electronics, San Diego
- Mr. George L. Hegg, 3M, St. Paul
- Dr. Gordon Hughes, Seagate Technology, Scotts Valley
- Dr. C. Denis Mee, IBM, San Jose
- Mr. Mike Riggle, Digital Equipment, Colorado Springs
- Mr. John L. Simonds, Kodak Research Laboratories, San Diego
- Mr. Norman. Taisoe, Magnetic Peripherals, Minneapolis
- Dr. Erich P. Valstyn, National Micronetics, San Diego

IEEE Magnetics Society Chapter Established in San Diego

Distinguished Lecture Series Launched

Growing interest in magnetic recording in the San Diego area and the efforts of Dr. James Lemke and others contributed to the establishment in November, 1983 of an IEEE Magnetics Society Chapter in San Diego. The Center for Magnetic Recording Research, in cooperation with the new IEEE Magnetics Society Chapter, has sponsored a lecture series which began in October 1983, with Mr. John Mallinson, then Manager of the Recording Technology Department at Ampex Corp., presenting a lecture entitled, "The Next Decade in Magnetic Recording". Since its inception, subsequent lectures hosted by the Center have addressed a wide range of technical interests and continue to be well attended. Lectures held to date:

Dr. James Lemke, Eastman Kodak and Eric Daniel, consultant. Highlights of the **International Conference on Magnetic Recording Media** held September, 1983 in Ferrara, Italy.

Dr. Geoffrey Bate, Verbatim Corp. **Material Problems in Magnetic Recording Media.**

Dr. David Thompson, IBM, San Jose. **Magneto-resistive Heads for Magnetic Recording: An Overview.**

Ms. Barbara Langland, Lanx Corp. **Signal Measurement & Processing in Magnetic Recording.**

Dr. Neal Bertram, Ampex Corp. **The Random State of Tape Noise Theory.**

Dr. Fred Jeffers, Eastman Kodak. **Unshielded Magneto-resistive Heads in Very High Density Recording.**

Dr. Mike Haynes, IBM, Tucson. **Measurement of Amplitude and Modulation Noise in Digital Tapes.**

Dr. James Monson, Harvey Mudd College. **Impressions of Perpendicular Recording Research in Japan.**

The Magnetics Society Chapter lecture series is normally held on the third Thursday of each month. Further information may be obtained from Kitty Morris, (619) 452-6198.

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CALENDAR

This section includes forthcoming conferences, meetings, symposia, special courses, etc. related to magnetic recording.

- Dec. 6** Magnetics Society Lecture. Room 111A, UCSD, 7-9 p.m. Speaker: Karl Strnatt, "Modern Permanent Magnet Materials."
- Jan. 24** Magnetics Society Lecture. Room 111A, UCSD, 7-9 p.m. Speaker: Dale Manguen.
- Feb. 21** Magnetics Society Lecture. Room 111A, UCSD, 7-9 p.m. Speaker: Clark Johnson, President, IEEE Magnetics Society.
- Apr. 29-May 2** Interomag '85. St. Paul, Minnesota.
- Aug. 26-30** International Conference on Magnetism, 1985. San Francisco, California.

For further information: **(619) 452-6198.**

Please send notices of meetings, etc. to the editor.

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