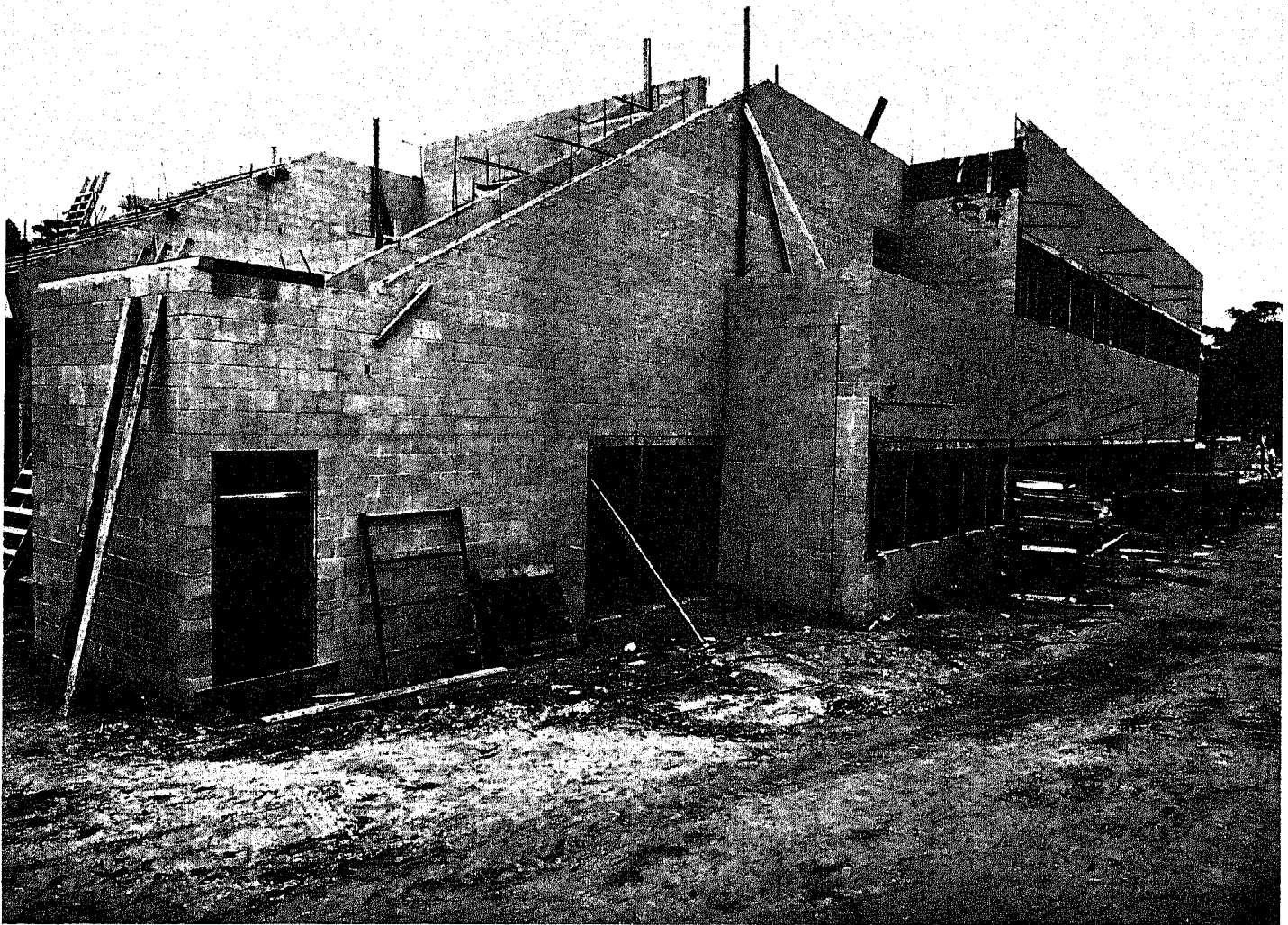


# CMRR Report

Center for Magnetic Recording Research

Vol. 2, No. 2  
Summer 1985



## New CMRR Facility Update

Members of the CMRR Advisory Council had an opportunity as part of their meeting on April 4 to tour the CMRR facility currently under construction on the UCSD campus.

After donning hard hats, they were led through the ground floor level by UCSD project coordinator Jim Graham. This area consists of laboratory space, the director's suite and conference room, and a small auditorium.

Major construction should be complete by the middle of October when UCSD will take what is called "beneficial occupancy" of the building. At that point, walls can be

painted, carpets installed and doors hung. A great deal of equipment remains to be ordered and installed, and CMRR faculty and staff are making plans to place remaining purchase orders by mid-summer to ensure timely delivery. The current schedule calls for the building to be ready for permanent occupancy by mid to late December. A dedication ceremony is planned which will take place after CMRR faculty and staff have moved in; plans will be announced in future issues of *CMRR Report*.



## From the Director

CMRR continues to take form in a most satisfactory fashion. Over ten UC faculty with more than twenty students are now receiving funding; their specific projects are listed elsewhere in this *CMRR Report*. Our building is over two-thirds complete with occupancy expected late this year. An interactive workshop on "Modulation, Coding & Signal Processing for Magnetic Recording Channels", organized by Jack Wolf,

was held May 19-22 with nearly fifty attendees. New CMRR courses in "Information Theory & Digital Communication: Coding for Error Control" (Jack Wolf) and "Physics of Magnetic Recording" (John Mallinson) are being conducted this academic quarter with excellent enrollments (fifteen and twenty-five students respectively). Neal Bertram continues to prepare for his graduate-level courses in magnetic recording theory to be held in academic year 1986. Dr. Amikam Aharoni, Weizmann Institute, Israel, has agreed to visit CMRR in the fall and will lecture on his speciality, micromagnetics. Dr. Desmond Mapps, Plymouth Polytechnic, England will also visit CMRR this fall to lecture on magnetic materials for technical applications. Three papers at the recent INTERMAG Conference were given by CMRR members or affiliates (Neal Bertram, Shelley Schultz et al and Hendrik Ferreira). Dawn Talbot has initiated the CMRR Japanese translation service discussed elsewhere in this *CMRR Report*. CMRR's first Ph.D. (D.K.Miu) graduated from Dave Bogy's group at UC Berkeley. Finally, it is my great pleasure to announce that Honeywell, Denver, Colorado has become the thirteenth of our industrial sponsors.

John C. Mallinson

## Supercomputer Center at UCSD

The University of California, San Diego has been named by the National Science Foundation as one of four sites for a national supercomputer center. The other sites are the University of Illinois, Princeton and Cornell.

The proposal for the site was developed by neighboring GA Technologies, Inc., in conjunction with an eighteen-member consortium which included UCSD, UC San Francisco, UCLA, Stanford, California Institute of Technology and San Diego State University, as well as other universities and research institutions.

The San Diego supercomputer will be a Cray X-MP/48, capable of handling up to one billion calculations per second. It will be able to accommodate up to 200 users at one time, all with access from their own terminals wherever they may be located.

UC President David P. Gardner said, "Selection of the San Diego campus as a regional center for super computing further confirms UCSD's already established reputation for world class scientific research. We are especially pleased that UC's faculty on all nine campuses will now have available to them at UCSD the high performance computing capability required to remain at the cutting edge of research in a variety of disciplines."

The Chancellor of UCSD, Richard C. Atkinson, said the new center "will accelerate basic research that underpins American technological and industrial progress."

The National Science Foundation is expected to provide a total of \$200 million for the four centers over the next five years. The San Diego facility is scheduled to be operational by early 1986.

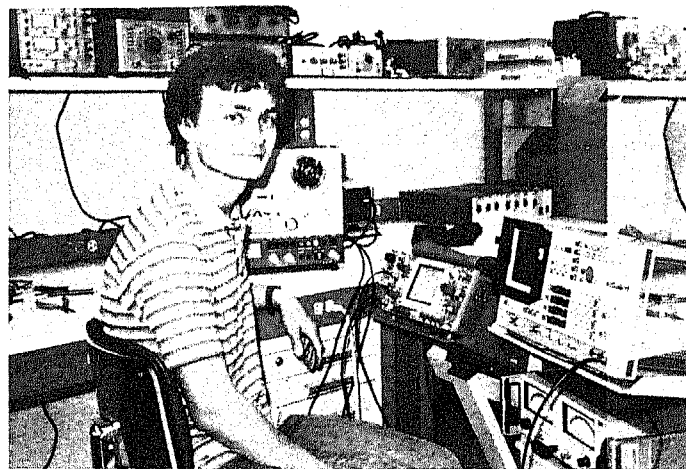
## Information Center Offers Japanese Translation Service

In May the Information Center announced a plan to improve access to Japanese language publications in the field of magnetic recording technology.

This service is available to the sponsoring companies which provide support for the Center for Magnetic Recording Research. Its purpose is twofold; primarily it will reduce the costs involved in having articles translated from Japanese to English and secondly, it will provide an alerting service to significant Japanese language journal articles translated into English.

Further details can be obtained from:

Dawn Talbot, Information Manager  
UCSD Center for Magnetic Recording Research, S-008  
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(619) 452-6213



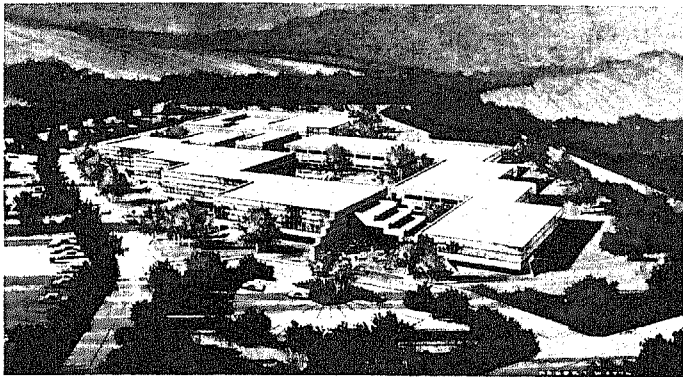
## French Academic Visitor

Jean-Marc Coutellier joined CMRR in February as one of the Center's first academic visitors. Coutellier received his Ph.D. in Material Science from the University of Grenoble, France in 1984. He worked on his thesis, "Feasibility Study of Thin Hexaferrite Films: Research and Growth of Suitable Substrates, Epitaxy, and Characterization of Obtained Films" while at the Laboratoire d'Electronique et de Technologie de l'Informatique (LETI), Grenoble.

While at LETI, Coutellier met Jean Pierre Lazzari, chief of the microelectronics laboratory there and formerly of Honeywell-BULL. One of the areas which Lazzari worked on at LETI was thin film heads. This association stimulated Jean-Marc's interest in magnetic recording technology, but on completion of his Ph.D., he found few opportunities in France to pursue this interest. Therefore, he turned to the USA and applied to CMRR since this Center offered graduate coursework as well as research facilities. In keeping with his goals, Coutellier has been taking courses in magnetic recording at UCSD. Shortly, necessary equipment should arrive at the CMRR Laboratory which will allow him to begin his own research project.

Funding for Coutellier's stay has been provided in part by CMRR. He was also awarded a grant from the French government based on a proposal he put forward pointing out the importance of magnetic recording technology to that country. At present, according to Jean-Marc, most of the research efforts in this field are being made by private companies.

Coutellier will stay here for a year and will work primarily with Dr. Neal Bertram on tape noise, in particular erased tape noise.



## Kodak Unveils Plans for New Facility

In a recent groundbreaking ceremony Eastman Kodak announced plans for a 500,000-square-foot facility on a 30-acre site in San Diego. The construction is planned in phases over a ten-year period and will eventually incorporate all the operations at present housed in several locations around San Diego. Construction of this facility indicates Kodak's commitment to the development and manufacture of magnetic media.

## Visiting Research Engineer

Dr. Rainer A. Rueppel from the Institute of Telecommunications of the Swiss Federal Institute of Technology will be in residence at the Center for Magnetic Recording Research during academic year 1985/1986. Dr. Rueppel will hold a joint appointment in the Department of Electrical Engineering & Computer Sciences and CMRR with the title of Visiting Assistant Research Engineer. He will teach courses and work on a joint research project with Professor Jack Wolf in coding and modulation for magnetic recording.

Dr. Rueppel received the Ph.D. degree from the Eidgenossische Technische Hochschule in Zurich where he studied with Professor James Massey. In addition to his work in coding and modulation, he is also an expert in cryptography.

## Du Pont Grant

Vance E. Senecal, Vice Chairman and Executive Director of the Committee on Educational Aid, E. I. DuPont de Nemours & Co., Inc. notified Chancellor Richard C. Atkinson on January 28, 1985 that the Committee had authorized a grant of \$15,000 to the Division of Engineering, UCSD for 1985/1986.

The purpose of this grant is to support research and teaching in the field of magnetic recording. DuPont has already made a generous grant of \$20,000 for 1984/1985, which was used to purchase laboratory equipment for CMRR.

## Tohoku University—Valuable Experience

Enthusiastic reports received from Vince Tobin speak of the valuable experience he is gaining from working in Professor Iwasaki's laboratory at Tohoku University. Vince, a second-year graduate student at UCSD is working on Co-Cr/Ni-Fe media with Dr. K. Ouchi. He was awarded a Fellowship from the Research Institute of Electrical Communication at Tohoku University. This award covers all living expenses during his stay in Sendai, Japan. CMRR funds provided for travel expenses to and from Japan.

## New Japanese Translation Journal

The Magnetics Society of the IEEE has been working to launch a new publication which will translate some 3,000 pages each year of the latest Japanese developments and advances in magnetics. The new monthly journal will be known as the *IEEE Translation Journal on Magnetics in Japan*. (TJMJ) and will translate several publications from the Magnetics Society of Japan and the Institute of Electronics and Communication Engineers of Japan. Agreements have been signed with these two societies to secure exclusive translation rights.

Articles will track Japanese research and development in several important areas such as:

- perpendicular and high density magnetic recording
- microwave ferrites
- single crystal magnetic heads
- single crystal magnetic materials
- advanced magnetic recording particles
- thin film flexible magnetic films
- amorphous magnetic thin films
- theory of the magnetization process

John Mallinson, director of CMRR, has been named as the editor of the journal. Some initial delays have resulted in a change from the original publication date of April 1985. Expected date of the first issue will be later in 1985.

## International Conference on Magnetism, ICM '85

The International Conference on Magnetism 1985 (ICM '85) will be held in San Francisco, California, on 26-30 August, 1985. This is in the series of triennial magnetism conferences sponsored by the International Union of Pure and Applied Physics. ICM '85 is held in cooperation with the Conference on Magnetism and Magnetic Materials (CMMM) which will not hold a meeting in 1985.

The conference is intended to serve the international community of scientists and engineers interested in magnetism by providing a forum for the presentation and discussion of new concepts, materials, and applications developed over the past three years. All persons interested in current topics related to magnetism are invited to attend the conference and to contribute to the technical sessions.

Some examples of topics currently of interest include the behavior of itinerant magnets near and above their Curie temperatures, the critical behavior of "random field" magnets, and the nature of spin glasses and mixed valent materials. The conference will also deal with new developments in applied magnetic materials such as the new rare earth-iron permanent magnets and magneto-optic recording materials. Plans include a special invited session designed to bring fundamental problems in applied magnetics to the attention of the research community. Satellite meetings are scheduled in the areas of thin films, neutron scattering, and the theory of magnetism.

CMRR faculty member Jim Lemke is giving a plenary talk and Neal Bertram served on the program committee. Donald Fredkin from UCSD's Department of Physics is delivering an invited paper.

The program of the conference will consist of invited talks as well as approximately 200 contributed talks and 600 posters. The proceedings of the conference will be published in the *Journal of Magnetism and Magnetic Materials*.

## Research Projects Currently Funded by CMRR

- "Materials for Magnetic Recording", Professor Johann Oesterreicher, Department of Chemistry, UCSD
- "Dynamics of the Magnetization: Magnetic Noise", Professor Harry Suhl, Institute of Pure & Applied Physical Sciences, UCSD
- "Mechanical Analysis of the Head/Disk Interface in Magnetic Recording", Professor David Bogy, Department of Mechanical Engineering, UCB
- "Mossbauer Spectroscopy on Materials for Magnetic Recording", Dr. Fred Parker, Department of Chemistry, UCSD
- "Research on Problems in Magnetic Recording", Professors Sheldon Schultz, Donald Fredkin and Saul Oseroff, Department of Physics, UCSD
- "Fluid Management Techniques for the Creation of Magnetic Recording Media", Professor Stanley Middleman, Department of Applied Mechanics & Engineering Sciences, UCSD
- "Studies on Thin Films of Magnetic Recording Materials", Professor Huey-Lin Luo, Department of Electrical Engineering & Computer Sciences, UCSD
- "Simulation of 3-D Flows in Very Narrow Channels", Professor Manuel Rotenberg, Department of Electrical Engineering & Computer Sciences, UCSD

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Editorial Assistant    Kitty Morris

CMRR report is published quarterly.

## Calendar

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

- June 20            Magnetics Society, San Diego Chapter Meeting, Room 111A Administrative Complex, UCSD. 7:00-9:00 p.m.
- Aug. 19-23        Problems in Magnetism. Institute for Theoretical Physics, Santa Barbara, CA
- Aug. 26-30        International Conference on Magnetism (ICM '85) San Francisco Hilton, San Francisco, CA
- Sept. 2-6           11th International Colloquium on Magnetic Films and Surfaces, (ICMFS-11). Asilomar State Park, Monterey, CA
- Oct. 14-18        Short course on Magnetic Recording Technology, CMU/Pittsburgh, PA
- Oct. 30-Nov. 4    SMPTE 126th Technical Conference and Exhibition, Los Angeles, CA
- Nov. 4-7           7th IEEE Symposium on Mass Storage Systems, Tucson, AZ
- Nov. 11-12        Regional Conference on Advanced Topics in Magnetic Recording, CMRR/University Extension
- March '86         Short course on Magnetic Recording Technology, CMRR
- Erratum            There was an error in the last issue of the Calendar. The 6th International Conference on Video, Audio & Data Recording will be held in Sussex, England March 17-21, 1986.

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