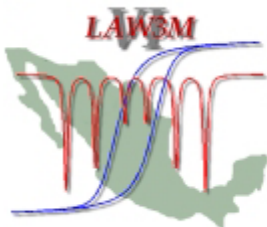


VI Latin American Workshop on Magnetism, Magnetic Materials and their Applications

April 7th-11th 2003
Chihuahua Mexico

Sponsored by:





VI Latin American Workshop on Magnetism, Magnetic Materials and their Applications

CIMAV, Chihuahua Mexico. April 7th-11th 2003



Workshop Summary

The “Centro de Investigación en Materiales Avanzados” (CIMAV) organized the *Sixth Latin American Workshop on Magnetism, Magnetic Materials and their Applications* during April 7-11, 2003 in Chihuahua Mexico. The main objective of the Workshop was to support scientific exchanges among researchers and institutions interested on recent developments in all branches of fundamental and applied magnetism.

The Workshop was held under the auspices of the local government, and sponsored by the International Union of Crystallography (IUCr), The Abdus Salam International Centre for Theoretical Physics (ICTP), International Union of Pure and Applied Physics (IUPAP), Centro Latinoamericano de Física (CLAF) and The National High Magnetic Field Laboratory (NHMFL).

The event was specifically tailored for researchers and students belonging to universities and research organizations to learn about the latest developments in the area of magnetism, magnetic materials and new applications. 60 young scientist from Argentina, Czech Republic, Belgium, United States, Brazil, Cuba, El Salvador, Venezuela, Chile, Austria, Poland, France and Mexico participated in the Workshop. Distinguished scientists from France, Austria, Ireland, Spain, United States, Brazil, United Kingdom, Argentina and Mexico delivered 23 lectures focusing on the physical concepts and the phenomena in magnetism, covering a wide spectrum ranging from nano-magnetic materials, magnetic recording, synthesis of new soft and hard magnetic materials, magnetic composites, thin films, etc.

The inaugural addresses were given by Dr. Sebastián Díaz De La Torre (CIMAV) and Dr. Javier Sanchez Reaza (Secretary of Industrial Development), while Dr. José Matutes Aquino (CIMAV), Mr. Hector Jaime Muñoz (Secretary of Education and Culture), Mrs. Miriam Sandoval (local government) and Dr. Sanchez Granillo (University of Chihuahua) were part of the presidium. The Workshop featured a visit to CIMAV’s laboratories, two technical sessions, three poster sessions, one forum on International Collaboration and one Symposium on International User Facilities in Support of Magnetic Related Research. On behalf of the organizers, Dr. José Matutes made the closing remarks and extended best wishes to the participants.

Invited Talks

The duration of each lecture was either 30 or 45 minutes, for lecture and tutorial respectively. The following invited talks were presented during the Workshop.

Charge ordering and magnetism in half doped manganites. The role of Zener polarons.

Juan Rodríguez Carvajal, Laboratoire Léon Brillouin, France

Generation, Measuring Technique and Application of Pulsed Fields to Magnetism

Roland Grössinger, Technical University of Vienna, Austria

Characterization of Magnetic Fluids

Paul Fannin, Trinity College Dublin, Ireland

Novel Magnetic Materials Prepared by Electro Deposition Technique: Arrays of Nanowires and Bi-layer Microwires

Manuel Vázquez, Instituto de Ciencias de Materiales (CSIC) Madrid, Spain

Magnetic Field Induced Critical Behavior in the Hidden-Order Compound URu₂Si₂

Marcelo Jaime, National High Magnetic Field Laboratory - Los Alamos, U.S.A.

Exchange bias in magnetic nanostructures

Sergio Machado Rezende, Universidade Federal de Pernambuco, Recife, Brazil

Giant Magnetoimpedance and Inductance Spectroscopy

Raúl Valenzuela Monjarás, Instituto de Investigaciones en Materiales -UNAM Mexico

Magnetism of U/Fe Multilayers

Michael F. Thomas, University of Liverpool, U.K.

4d- and 5d-transition Metal Oxides: Nature's Engineered Multi-layered Systems

Jack Crow, National High Magnetic Field Laboratory - Tallahassee, U.S.A.

Magnetolectricity via crystallography

Luis Fuentes Cobas, Centro de Investigación en Materiales Avanzados, S. C. Mexico

First Principles Modeling of Magnetism and Phase Equilibria in Binary Alloys

Alejandro Díaz Ortíz, Instituto Potosino de Investigación Científica y Tecnológica A.C., Mexico

Review of High Strain Particulate Magnetostrictive Composites

Greg P. Carman, University of California at Los Angeles, U.S.A.

Magnetism at CIMAV

José Matutes Aquino, Centro de Investigación en Materiales Avanzados, S. C. Mexico

Materials Requirements for Terabit/in² Magnetic Recording

Ernesto Marinero, IBM Almaden Research Center, U.S.A.

Non-Fermi-Liquid Behavior Induced by Antiferromagnetic Spin-Fluctuations

Pedro Schlottmann, Florida State University, U.S.A.

Mexico and the Early History of Magnetism

Alberto Passos Guimaraes, Centro Brasileiro de Pesquisas Físicas, Brazil

Magnetism and Magnetic Materials Research at Synchrotron Radiation Facilities in U. S.

Chi-Chang Kao, National Synchrotron Light Source, Brookhaven National Laboratory, U.S.A.

Neutrons as a Probe of Materials: Neutron Scattering Facilities in the U. S.

Thomas Mason, Spallation Neutron Source, U.S.A.

High Magnetic Fields: an Overview of World Facilities and Possible Opportunities for the Future

Jack Crow, National High Magnetic Field Laboratory - Tallahassee, U.S.A.

Ferrites and Oxides

Roland Grössinger, Technical University of Vienna, Austria

Opportunities for International Cooperation in Materials Research. An NSF Perspective

Jack Crow, National High Magnetic Field Laboratory - Tallahassee, U.S.A.

Carbon Nanotubes under high magnetic fields

Bertrand Raquet, Laboratoire National des Champs Magnétiques Pulsés, Toulouse, France

Technical Sessions

Two Technical Sessions took place simultaneously. “Rietveld Method” presented by Dr. Juan Rodríguez Carvajal and “Oxides and Ferrites” headed by Dr. Roland Grössinger. Participants chose the most adequate topic according to their interests. The duration of these Technical Sessions was 2 hours. Lively and often excited discussions between students and scientists favored the exchange of knowledge and experiences.

Poster Sessions

137 Abstracts were accepted for Poster Presentation. Three Poster Sessions exposed the latest developments in magnetic research. The first session was dedicated to Fundamental Magnetic Properties. The second session included soft and hard magnetic materials, magneto-electronic materials and instrumentation. The third session included magnetic films, multilayers, superconductors and interdisciplinary topics. An average of 20 posters were presented in each session. More than 70 manuscripts were received for publication, upon referee acceptance. The proceedings of the Workshop will be published as a special issue of the Journal of Alloys and Compounds (Elsevier).

Forum on International Collaboration

Several well-known scientists from different countries directed the Forum. This Forum identified possible areas for mutually beneficial collaborations. It also led to the recommendation that extensive use of electronic communication for information exchange must be made to promote and facilitate research collaborations and educational activities. The VI LAW3M organizing committee offered their website to include a special place for international collaboration upon the recommendations of the Forum. Information about institutions and scientists working on magnetism, subjects, scholarships, funding, collaborative program proposals, training courses, donation opportunities and special needs will be placed at this site. The site will be available at www.law3m.org.mx at least during one year. After this period, the site must be transferred to the VII LAW3M Organizers. The group leaders were:

Dr. Roland Grössinger, Technical University of Vienna, Austria
Dr. Luis Fuentes Cobas, CIMAV, Mexico
Dr. Raúl Valenzuela Monjarás, Instituto de Investigaciones en Materiales -UNAM Mexico
Dr. Vicente Sagredo, Universidad de Los Andes, Venezuela
Dr. Greg P. Carman, University of California at Los Angeles, U.S.A.
Dr. Ernesto Marinero, IBM Almaden Research Center, U.S.A.
Dr. Fernando Luis de Araujo Machado, Universidade Federal de Pernambuco, Brazil

Symposium on International User Facilities in Support of Magnetic Related Research

This Symposium was organized by Dr. Jack Crow and sponsored by the National High Magnetic Field Laboratory. The main objective of the Symposium was to present the most important facilities for scientific research within the United States, mainly those related to magnetic research. It consisted on 4 lectures, 45 minutes long, explaining about facilities such as Synchrotron Radiation, Neutron Scattering and High Magnetic Fields. Additionally, opportunities for International Cooperation within the National Science Foundation were presented.

Questions and comments about this report should be directed to Verónica Corral Flores at veronica.corral@law3m.org.mx or veronica.corral@cimav.edu.mx. Address: Centro de Investigación en Materiales Avanzados, Miguel de Cervantes 120, Complejo Industrial Chihuahua, C.P. 31109, Chihuahua, Chih. Mexico.