

Conference Report III

13TH INTERNATIONAL CONFERENCE ON ELECTORRHEOLOGICAL FLUIDS AND MAGNETORHEOLOGICAL SUSPENSIONS (ERM2012)



ANKARA, TURKEY
JULY 2 – 6, 2012

The 13th International Conference on Electrorheological Fluids and Magnetorheological Suspensions (ERM2012) was held in Ankara, Turkey at Gazi University on July 2-6, 2012. The 1st International Conference on Electrorheological Fluids and Magnetorheological Suspensions took place nearly 25 years ago and this conference continued the same tradition by providing an arena for researchers around the world to present their new research findings in these fields and opportunity to learn about the latest research and tech-

nology and to renew their acquaintances. The meeting brought scientists and engineers in multidisciplinary areas such as chemical engineering, mechanical engineering, materials science and engineering, physics, chemistry and polymer science and technology together to explore the state-of-art technology, identify thrust areas to be focused on and discuss their problems/issues. All oral presentations were held in a single session to enhance the interactions between the scientists and engineers. The

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Figure 1:
ERMR 2012 Conference
Photo

ERMR2012 Conference included plenary lectures by prominent leaders in the fields.

About 130 participants from more than 50 organizations attended the Conference and 15 plenary speeches, 64 oral presentations and 57 poster presentations were taken place including the following areas: (i) synthesis, characterization and processing of novel ER/MR materials, (ii) dynamics, chain and structure formation of ER/MR materials, (iii) ER/MR elastomers, ferro-gels and their characterizations, (iv) rheological techniques and measurements of ER/MR materials, (v) modeling and simulations of ER/MR materials, (vi) device development and control techniques, and (vii) applications of ER/MR materials.

In the ERMR2012 conference, MR materials and their applications took highly broad place. C.A. Evrensel from University of Nevada, USA, opened the first session with a plenary speech on "Magnetorheological Fluids for Cancer Therapy". In the fields of magnetorheological elastomers (MRE), S. Odenbach from TU of Dresden, Germany highlighted new developments in data management which enables single particle analysis and statistical analysis of the structures in an MRE in his plenary lecture. In another plenary lecture in the MRE field was given by F. Gordaninejad (University of Nevada, USA) on new developments for integrated systems with thick MREs. D. Barber (LORD Co., USA) gave the latest developments of LORD® MR fluids at the extremes in his plenary speech. R. Hidalgo Alvarez from University of Granada, Spain, focused on particle shape effects in MR fluids in his plenary talk. D.L. Klingenberg (University of Wisconsin, USA) illustrated how the increased extent of layer formation increases the yield stress by increasing the stresses transmitted by both the magnetizable and nonmagnetizable spheres in

his plenary lecture. S. Smoukov from Cambridge University, UK demonstrated magnetically responsive bi-stable hierarchical materials with novel functionality which can be used effectively for designing sustainable and energy responsive systems. J. de Vicente from University of Granada, Spain highlighted true yield stress in magnetorheology with the aid of simulations and experimental techniques for a wide range of MR fluids, inverse ferrofluids and ionic liquids based MR fluids in his plenary speech. H. Böse (Fraunhofer Institute, Germany) gave plenary speech on magnetorheological torque transmission devices with permanent magnets. W. Li (University of Wollongong, Australia), M. Nakano (Tohoku University, Japan) and S. Xuan (University of Science and Technology of China) gave plenary talks on novel MR shear thickening fluids, MR rubber composite and MR elastomers, respectively.

In the area of electrorheological fluids issues, H.J. Choi (Inha University, Korea), X. Zhao (Northwestern Polytechnical University, China), and R. Tao (Temple University, USA) delivered plenary lectures. Choi and Zhao covered novel ER materials with core-shell structured microspheres and micro/nano hierarchical structured titania particles in their talks, respectively and Tao focused on reduction of viscosity of liquid suspensions for energy applications in transporting crude oil via pipeline.

Attendance to the presentations was exceptionally high. Poster presentations were divided in two sessions and held in afternoons after the closing of the sessions which filled with stimulating discussions. The best student research award in the area of electrorheological fluids was given to Y.D. Liu of Inha University of Korea on the research entitled "Copolyaniline coated monodisperse polystyrene microparticles and



Figure 2 (left):
ERM2012 Conference
Venue, Gazi University Main
Building, Ankara.



Figure 3 (middle):
Daniel Barber asks a ques-
tion during the ERM2012
Conference.

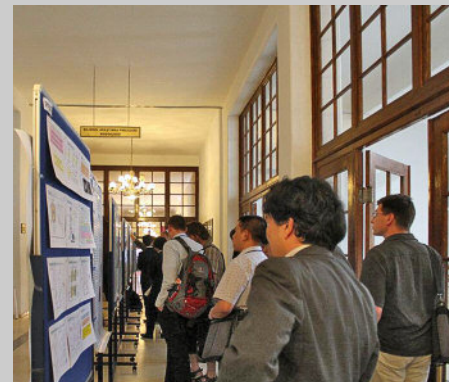


Figure 4 (right):
A view from the poster area.

their electrorheological response” by the Winslow’s family. The best student research award on magnetorheological suspensions was given to S. Kaneko of Keio University of Japan on the research entitled “Effect of a magnetic field on sloshing pressure in a magnetic fluid” by the Lord Co.

Beside the pure scientific program during the five days, some special events were also organized. A guided tour to the old city and some important points of Capital City of Ankara were organized before the Gala Dinner. Special samples of Turkish classical music and folk dancing were performed by a group from Republic of Turkey Ministry of Culture and Tourism to exhibit Turkish culture at Gala Night to the delegates.

After finishing this successful meeting, the next Conference is planned to be organized in University of Granada Spain in 2014. It is expect-

ed that during the next conference the interaction between polymer chemists synthesizing the new ER/MR materials, experimentalists from the rheological side characterizing their rheological properties and theoretical physicists describing the electric field and magnetic field dependent phenomena in ER/MR fluids rheology and mechanical engineers to carry out vibration damping tests will give rise to a deeper understanding of the ER/MR phenomena and result with findings of new areas in this field.

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