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Conference Reports

1990 INTERMAG CONFERENCE, BRIGHTON, UK

The 1990 INTERMAG Conference was held in Brighton, England from April 17 to April 20, 1990. There were 900 papers divided into 55 sessions, including a tutorial session on biomagnetism. Approximately 1100 people were in attendance.

Magnetic Separation

Four contributed papers on magnetic separation were included in session "Magnetization Processes".

The first paper, by A.J. Kramer, J.J.M. Janssen and J.A.A.J. Perenboom, all of the University of Nijmegen, The Netherlands, was entitled "Single-wire HGMS of colloidal particles: the evolution of concentration profiles". It discussed the initial evolution of concentration profile of colloidal Mn_2O_3 particles around a magnetized steel wire, in regions of repulsive interaction.

The second paper by P.Lawson and R. Gerber, both of the University of Salford, entitled "Viscosity effects in multi-wire HGMS" investigated experimentally the effects of viscosity and flow velocity on the performance of multi-wire HGMS filters. The results were found to be in agreement with theoretical model based on HGMS filter performance exponential law.

The third paper with the title "Efficiency of a superconducting OGMS separator" was submitted by T. Janowski and S. Kozak, both of the Institute of Electrotechnics, Warsaw, Poland. A theoretical model of particle movement in OGMS was developed and compared with experimental results obtained using industrial water.

The fourth paper "2-D simulation of ultra-fine particle capture by a single-wire magnetic collector" by L.P. Davies of NNC and R. Gerber, of the University of Salford described a theoretical model for the capture of ultra- fine particles on a single-wire HGMS collector. It was shown that diffusion, not the fluid flow, is responsible for downstream particle capture.

Biomagnetism

A paper "The effects of time-varying magnetic fields on biological materials" by F.S. Barnes of the University of Colorado reviewed the mechanisms by which ac magnetic fields interact with biological materials. Selected data from some of the most frequently cited experiments on the biological effects of these fields at low frequencies were presented along with their possible relevance as health hazards.

Hard Magnetic Materials

This session focused on Re-Fe-B based hard magnetic materials. Several papers described recent work aimed at improving the two main technological limiting features of these materials: corrosion resistance and temperature stability.

Papers by Tenaud et al., Sagawa et al. and Hirosawa described the effect of V/Mo additions in NdFeB materials in combination with Dy and Co. Both corrosion resistance and temperature stability were shown to improve. Observed microstructural changes include the precipitation of V_2FeB_2 which replaces the B-rich $Nd_{1+x}Fe_4B_4$ phase typical in conventional NdFeB-based magnets.

A paper by Mitchell emphasized the importance of optimizing substrate microstructure, pre and post coating treatments, deposition process and deposited material in order to obtain high quality and reliable NdFeB-based permanent magnets. All these developments will lead to an increase in the useful maximum operating temperature and conditions of NdFeB-based magnets and hence extend their range of applications.

Papers by Fidler et al., Knoch et al. and Grossinger et al. provided further evidence of the improved coercivity by Ga additions.

The final paper by Yoneyama demonstrated an interesting 14 MGOe bonded magnet prepared from rapidly quenched NdFeCoZrB alloy with improved magnetizability and high loop squareness.

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