

Fredericksz Medal

Prof. S. Chandrasekhar, Centre for Liquid Crystal Research, Bangalore, has been awarded the Fredericksz Medal for his 'outstanding scientific work in the field of Physics of Liquid Crystals'. The medal, the Russian Liquid Crystal Society's highest award, was instituted in honour of

the famous Russian scientist V. K. Fredericksz (1885–1944), who is considered as the father of liquid crystal research in Russia. The previous recipients of the medal are Tsvetkov (Physics, 1997), G. W. Gray (Chemistry, 1977), A. Saupe (Physics, 1998), V. Shibaev (Chem-

istry, 1998), L. Blinov (Physics, 1999), D. Demus (Chemistry, 1999). For the year 2000, the awardees are S. Chandrasekhar (Physics) and A. Sonin (Chemistry). The presentation of the medals will take place during the 19th International Liquid Crystal Conference to be held in Edinburgh.

Ecological Society of America member

The Ecological Society of America has chosen Prof. Madhav Gadgil, Centre for Ecological Sciences, Indian Institute of

Science, Bangalore as its Honorary Member for the year 2001. This Society, which is world's largest and most

active organization of ecologists, recognizes one individual by naming him/her as the Honorary Member of the year.

Environmental magnetism*

Environmental magnetism is the study of the intrinsic magnetic properties of samples to understand past (palaeo) environments and climates. It has been gainfully used in placer mineral exploration, understanding past climatic changes, surface processes, sediment movement in harbours, beaches, etc. river-bed sediment transport, environmental pollution, impact of anthropogenic activities, etc.

Efforts to use environmental magnetic techniques in India have been limited, probably because of lack of awareness of this fascinating discipline. The laboratory methods of determining magnetic properties are simple, rapid, inexpensive and non-destructive. The data obtained may throw light on such varied aspects of the environment/climate as Milankovitch periodicity to palaeo-rainfall reconstruction to land-use changes and soil erosion.

Against this backdrop, the first workshop on environmental magnetism for faculty members of Indian universities and colleges was organized. The workshop was conducted by F. Oldfield, (PAGES International Project Office, Bern, Switzerland) who is a pioneer in the field of environmental magnetism. In the morning sessions, he delivered lectures on the principles of environmental magnetism and its applications in earth, atmospheric and ocean sciences. Several case histories presented during the lectures were useful to the participants. In the afternoons, with the help of the personnel of the Ocean Science and Technology Cell (OSTC) Mangalore University, he demonstrated the use of magnetic instruments and the participants made magnetic measurements on their own samples.

The formation, transport, deposition and distribution of magnetic minerals in different parts of the environment were explained. Magnetic minerals are ubiquitous and sensitive to/indicative of chemical, thermal and physical transformations, and may be detected and characterized at ppm level concentrations. All these features make it possible to gainfully utilize magnetic minerals to study the environment – both present and past – and the changes

brought about by natural processes and anthropogenic activities.

Oldfield explained the different types of magnetic minerals in environmental samples like diamagnetic, paramagnetic, ferrimagnetic and imperfect antiferromagnetic substances, with examples. He also explained the different magnetic grain sizes like superparamagnetic, stable single domain, pseudo-single domain and multi-domain grains and how they are related to different environments of formation.

He introduced the basic instruments that are used in environmental magnetic studies: magnetic susceptibility meter and accessories, magnetizer and electromagnet, spinner fluxgate magnetometer, vibrating sample magnetometer and other special methods of magnetic studies like TEM, measurement of Curie temperature and study of magnetic properties at both high temperatures and low temperatures. He explained the definitions, meanings and environmental significance of the various magnetic properties (and inter-parametric ratios) that could be measured using the above instruments – magnetic susceptibility at high and low frequencies (χ_{LF} and χ_{HF}), frequency-dependent susceptibility (χ_{FD}), anhysteretic remanent magnetization (ARM), isothermal re-

*A report on the National Workshop on 'Teacher Education in Environmental Sciences (Environmental Magnetism) held at the Mangalore University during 9–18 February 2001 and organized by the Ocean Science and Technology Cell (OSTC), in collaboration with the Association of British Scholars, Mangalore Centre.