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## A New World of Science: Potential for Gain...

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# A New World of Science: Potential for Gain. . .

from Professor M Fontana, Università di Parma, Italy

The historic changes which took place in Eastern and Central Europe in the last two years cannot fail to have strong repercussions on the future of research and technology in Europe. Clearly the scope of such events is so great that the scientific community cannot expect to play a determinant role in shaping them. This does not and should not mean however, that there is nothing we can do as a community of researchers. A particularly poignant problem is the present and future exodus of the best scientific minds from the former Soviet Union and the other countries of the Eastern block. Given the very real difficulties our eastern colleagues must face, not only in pursuing their research activities, but also in sheer survival, it is not surprising that many researchers, old and young, decide to leave these countries to accept what to them must be very advantageous offers from Universities and research establishments in Western Europe and the USA. The short range advantage is clear for both sides: the eastern scientist and the Western Institutions.

However in the long run we must ask ourselves if the strong depletion of scientific human resources with its attendant decline in the levels and quantity of scientific and technological research is a good thing, not only for the eastern countries, but also for Europe as a whole. The scientific tradition,

the accomplishments of research in such countries as the former USSR are too well known to be mentioned here. Such a treasure, which belongs to us all, would risk dispersion and disappearance if too many of the best people migrated. This is particularly relevant in the research fields our community is most closely concerned with, i.e. the physics and chemistry of liquid crystals, of phase transitions and critical phenomena, of disordered systems.

I think that in the long run we shall help ourselves and the quality and perspectives of research in Europe by helping our colleagues in Eastern Europe to stay in their countries, to avoid the painful decision many of them are facing. A possible way to proceed is to make it as easy as possible for our eastern colleagues to spend more or less extended periods of time working in Universities or research institutions in Western Europe, with particular emphasis on the mobility of bright young researchers.

Certainly at the present time many of us are involved in such efforts on a more or less individual level. It seems to me that we could be much more effective if we could somehow coordinate this activity and institutionalise it. This, besides obvious advantages, would also open up possible new channels for financial support, for instance from the European Community.

From my personal experience I can cite two examples of what can be done. In the organisation of the European Liquid Crystal Conference at Courmayeur in 1991 we made a strong effort to secure funding with the stated purpose of helping Eastern European researchers to participate. Another example is the creation of the Western European section of the Lebedev Institute in Turin, Italy, at the Institute for Scientific Interchange. I am sure that many other similar activities are already taking place or are planned.

The first step towards better coordination would be to use our magazine *Liquid Crystals Today* as a permanent clearing house for information on temporary jobs, projects, fellowships, funding which may be available or used to help young researchers. I think that the International Pisa Conference could be a good place to discuss this matter. From now until June there should be time for ideas and proposals to come forth perhaps using *Liquid Crystals Today* as a forum. The upheavals of recent years are opening up new vistas, and many possible problems for Europe and for European science. It is important at this critical time that our community be presented with concrete and realistic proposals to prevent the decline of scientific research in Eastern Europe. **If we succeed, we shall all gain — if not we all stand to lose.**

## Scientific Notes

### Incommensurate Smectic Phases?

from Prem Patel, Li Chen, S Sabol Keast, Mary E Neubert, & Satyendra Kumar, Dept of Physics & Liquid Crystal Inst, Kent State University, Kent, OHIO 44242, USA

The incommensurate smectic (Sm) phases were reported to exist in mixtures of DB<sub>7</sub>OCN + 8OCB (Phys. Rev. Lett. 55, 1476, 1985) and 8OBCAB + DB<sub>8</sub>OCN (Liquid Crystals, 5, 421, 1989).

These reports were based on results of powder x-ray diffraction technique. A careful reexamination of the DB<sub>7</sub>OCN + 8OCB mixtures, with high-resolution x-ray diffraction, revealed that the Sm-A<sub>12</sub>

phase of this system was, in fact, a coexistence of the partial bilayer Sm-A<sub>D</sub> and the bilayer Sm-A<sub>2</sub> phases (Phys. Rev. Lett., 67, 322, 1991).

This unexpected result necessitated a high-resolution x-ray study of the 8OBCAB + DB<sub>8</sub>OCN system, the only other system reported to exhibit (three) incommensurate phases. The results prove that the Sm-A<sub>11</sub> and Sm-A<sub>12</sub> phases are coexistences of the Sm-A<sub>D</sub> and

Sm-A<sub>1</sub>, and the Sm-A<sub>D</sub> and Sm-A<sub>2</sub> phases, respectively. The incommensurate soliton phase (Sm-A<sub>1S</sub>) is found to be a coexistence of the Sm-A<sub>D</sub>, Sm-A<sub>1</sub> and Sm-A<sub>2</sub> phases. Wide coexistences are observed as a consequence of very slow relaxation times (~ day) and some sample decomposition.

At this time, it seems that there remain no known liquid crystals that form incommensurate smectic-A phases.