

## **The Royal Society of Chemistry's comments on the question "What factors should the CCLRC take into account in determining the timeline for a next generation neutron source from a UK perspective?"**

The application of neutron scattering to materials chemistry is an area where the UK leads the world.

In considering the factors that the CCLRC should take into account in determining the timeline for a next generation neutron source is very important to maintain balance between the money that is available to fund small grants through the research councils and that available to fund "big science" and central facilities. There is no point having an all-singing, all-dancing neutron source if there is nobody to prepare the samples to run or to analyse the data that it produces.

CCLRC are successful in obtaining funding for large projects but their success in winning funds is now out of all balance to the benefit gained from the facilities existence, because the ensuing paucity of funding remaining for "delocalised" science in Universities will remove the innovation that produces the streams of materials to be studied and problems to be addressed by the facilities. The prospect of huge investment in central research facilities associated with Diamond is compounding the problem by removing funds that could and should be used to improve research infrastructure in universities.

The needs of the chemistry community are very different from much of the neutron facility user community i.e. chemists have a widespread need for neutrons but as one of many techniques to back up synthesis and more general characterization programmes. The current access routes (and demands for new sources) seem to be defined by the facilities and the those who frequently have research programmes fully dedicated to neutron work and can plan years ahead. While access times remain at 9-12 months the neutron facilities fail to address the real needs of much of the chemistry community.

The RSC is concerned to see the plans for the Research Centre at DIAMOND/ISIS – in essence if these are user facilities this is a good idea but if the underlying purpose is to carry out basic research with dedicated research staff then this will have a detrimental effect on the rest of the UK community – again concentrating funding at the facilities.

Having noted the points above, and assuming a roughly constant neutron budget for the coming years, the question for the UK is how to apportion it between ISIS, ILL and a possible ESS. Arguably, the money for the next decade has already been spent, through the signing of a new 10 year treaty for ILL, and the funding of TS2 at ISIS. The UK has the best neutron provision in the world at present, although this will be challenged when the new US source (SNS) starts operating in 2007. The UK's need for a new source will then become evident, but is less urgent than for other European nations.

The RSC advocates a positive UK view to the building of an ESS in the medium term (5-15) years. The UK cannot afford to be the host nation (unless we upgrade ISIS into ESS), but if enthusiasm amongst our European colleagues leads to the project going ahead then we should be a partner, although this would lead to painful decisions with regard to future ILL/ISIS funding. If ESS is not funded within the next 10 years (or goes ahead without UK involvement) then this will damage UK Science in the long term.

The chemistry community is a large community of (mainly) small users whose requirements are rather different from the developing system. Not only in terms of widely distributed

funding (to provide the samples) but also in terms of access – chemists need short experiments/rapid access/ full instrumental support – i.e. chemists are users and the funding bodies/ facilities must provide a service.

The ESS would be a further benefit – expanding this community- but the agenda for ESS is unlikely to be driven by chemists as (mostly) individually chemists' research doesn't absolutely require a new source (chemists' research programmes are more diverse).

Overall we must maintain the level of funding to the user community in the Universities – and we must strive to keep the neutron facilities (existing or future) as service providers to a large number of users. If the ESS is to be funded then it should be with the recognition that chemists will be major users and UK science will benefit – but the community will drive the need for it though the basic chemistry being done in many Universities.

*The Royal Society of Chemistry is the UK Professional Body for chemical scientists and an international Learned Society for the chemical sciences with 46,000 members world-wide. It is a major international publisher of chemical information, supports the teaching of the chemical sciences at all levels and is a leader in bringing science to the public.*

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