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On the other hand, the JRR3M which is the medium flux reactor was started recently operation, which eases our frustrations due to the shortage of steady neutrons for a long period. Now Japanese neutron users can access to either facilities under the well organized user programs. Furthermore many are familiar to both pulsed and steady sources and enjoy the complementarity. Therefore soon or later the program will be arranged in such a way that we can access to both facilities more easily.

I will discuss in the presentation the complementarity of both neutron sources stressing both the scientific and technical merits by showing some real examples. Then I will present the future pulsed neutron project in Japan which is now proposed to the Japanese government.

OCM-01.06.03 CHEMICAL PHYSICS WITH ADVANCED NEUTRON SOURCES by J.W.White*, Research School of Chemistry, Canberra, ACT, 0200, Australia

This lecture will illustrate the variety of problems that can now be solved with modern neutron scattering methods and the feasibility of doing valuable but different types of experiment at neutron sources of different power and spectral characteristics. Examples from our recent work on Nucleation of Zeolites in silicate gels, Microphase separation in paraffin mixtures, Combined High resolution diffraction and inelastic scattering for Intercalates, will be used to illustrate methodological aspects of the complementarity that can be developed by astute optimisation of sources and instruments and some detail will be given on The superconductivity and Lattice Dynamics of Rb3C60 as an example of how a unique an insight into the mechanism of the superconductivity was recently obtained by neutron inelastic scattering.

As concerns Rb3C60 superconductivity, the phonon density of states of Rb3C60 has been measured above and below the superconducting phase transition temperature of 29K and in the energy transfer range 1<DE/meV<300 at an energy resolution DE/E=2%. Marked changes in the molecular vibrational spectrum of C60 are observed upon intercalation with rubidium. In particular the Hg modes at 54meV and Tlu mode at 66meV are strongly quenched and other modes are broadened and shifted. Distinct changes in the Hg, Tlu modes near 180meV and the Hg modes near 135meV are observed on passing through the superconducting transition temperature region. These changes strongly suggest the involvement of molecular motions in the superconductivity of these materials.

PS-01.06.04 SXD: SINGLE CRYSTAL STRUCTURAL AND DIFFUSE SCATTERING STUDIES BY TIME-OF-FLIGHT NEUTRON LAUE DIFFRACTION. by C.C.Wilson*, ISIS, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon OX11 0QX, UK

SXD, the single crystal diffractometer at the UK Spallation Neutron Source ISIS, uses the Laue time-of-flight diffraction technique for structural studies. This method exploits the ability of an instrument equipped with a 2D position-sensitive detector (PSD) on a pulsed neutron source to access large volumes of reciprocal space in a single measurement and has significant advantages in many areas of structural work.

Among the areas in which SXD is routinely operating are the following:

- Structural studies: location of unknown atoms, especially hydrogen, water and other light units; the detailed study of hydrogen bonding in organic materials, especially in very strong hydrogen bonds; the study of long range (static) structural disorder, for example in minerals and cases where species are close in atomic number ; the exploitation of the high sin q/y measurements possible on a spallation source (greater than 3A-1) to measure high resolution effects;
- Diffuse scattering studies: the study of short range order and disorder; quantitative atomic level cluster modeling: quantitative Reverse Monte Carlo type modeling.
- Incommensurate structures and phase transitions: the study of magnetic structures, especially where the incommensurate peaks are in obscure or unknown regions; the monitoring of structural changes, where the technique is of especial use when the phase transition can be monitored and characterized through a small subset of reflections, as these can often be obtained in a single data histogram using time-of-light Laue diffraction.

This paper will present examples of the use of SXD in these areas.

