2010/1/22: Neutron Program Advisory Committee

Program ID: 2009S02

Title: Time of Flight Neutron Diffractometer Specialized for Structure Biology

Principal Investigator: Toshiyuki Chatake

Decision: continue

Beam allocation: β =0%

Approval and suggestion(s) to IMSS: budget and resources should be discussed later

Comments:

The applicants proposed to construct a diffractometer specialized for studies of biological materials at a beam line in J-PARC. Compared with a similar diffractometer iBIX in J-PARC which is now under operation, the proposed diffractometer is designed to access larger lattice length up to 20 nm than that by iBIX and will have dynamic nuclear polarization analysis option. The scientific aim of the machine is to elucidate the mechanism of relevant functions related to protons in bio-molecules.

The committee appreciates the scientific and social purpose of the proposal, and hence would like to recommend continuing the project as a S-project in KEK for 2010. However, the applicants are requested to clarify and/or solve the following problems.

1) The difference of performance between the proposed machine and the currently operating diffractometer iBIX is not clear except that the proposed machine can access the lattice length up to 20 nm. Please clarify the advantage of the proposed machine compared with iBIX. If necessary, have a meeting to evaluate the performance of iBIX.
2) The scientific problems the applicants want to solve using the proposed machine and the scientific demands from the user community are not clear. They are requested to pick up and summarize them.
3) The dynamic nuclear polarization analysis option in the proposed machine is very fascinating. However, there seem many unsolved technical problems. Please contact specialists for the dynamic nuclear polarization

analysis to solve the technical problems. Fortunately there are many specialists in KEK and other facilities in Japan. It is also important to organize a team for the construction of the dynamic nuclear polarization analysis option.