Abstract Submitted
for the HAW09 Meeting of
The American Physical Society

Production and use of thermal and cold neutron with tandem accelerator in Kyoto University TASHIRO JIN — As a graduate research in the Faculty of Science, Kyoto University, we are developing a miniature neutron source and conducting experiments with neutrons produced. Compared with X-rays, neutrons haven't been very widely used for material science until now. It is because there are few facilities for experiments, for an experiment with neutrons requires large-scale ones, such as a nuclear reactor or a high-energy accelerator for spallation reaction. However, neutrons can be also produced by nuclear reactions with much lower energy. Using this method, facilities can be smaller and lower in price than traditional methods.We are building a small neutron source using the tandem accelerator of Kyoto University. To produce neutrons, we used 7Li(p, n) reaction with 3MeV protons. In order to obtain thermal and cold neutrons, we used polyethylene and the mesitylene moderator, which was cooled down to 10K with a refrigerator, respectively. The production of the thermal neutrons was already confirmed, by measuring the time-of-flight of moderated neutrons. However, we could not confirm the production of cold neutrons. Finally, we are planning to utilize thermal neutrons for experiments, such as neutron capture.

Tashiro Jin

Date submitted: 12 Aug 2009 Electronic form version 1.4