

40m Small Angle Neutron Scattering Instrument at HANARO: Characteristics and Control

T.-H. Kim¹, Y.-S. HAN¹ and S.-M. Choi²

¹Neutron Science Division, Korea Atomic Energy Research Institute, 1045
Daedeok-daero, Yuseong-gu, Daejeon, 305-353, Republic of Korea

²Department of Nuclear and Quantum Engineering, KAIST, 291 Daehak-ro,
Yuseong-gu, Daejeon, 305-701, Republic of Korea

E-mail: taehwan@kaeri.re.kr

Since small angle neutron scattering is very powerful tool to study nanoscale (1-100's nm) bulk structures in various materials such as polymer, self-assembled materials, nano-porous materials, nano-magnetic materials, metal and ceramics. In 2003, therefore, the HANARO cold neutron research facility project was launched and a state of the art 40m small angle neutron scattering (SANS) instrument was selected as top-priority instrument. The 40m SANS instrument at HANARO was completely developed in early 2010. With conducting the beam test and optimization for 7 months, it has been opened to outside users with a quite good performance since November 2010. The 40m SANS instrument control program is based on the LabView, which successfully controls the 32 motors, data acquisition, safety interlock system, polarization, detector type (3He or scintillation detector) and so on. In this presentation we will report the characteristics and the control of the 40m SANS instrument at HANARO. In addition, the high-resolution scintillation detector, which is completely installed in 2014, will be reported as well.