

Upgrade of the SAXS Apparatus at BL40B2

BL40B2 is mainly used in the small angle X-ray scattering (SAXS) measurement of soft materials, proteins, synthetic macromolecules, lipids, and surfactants. It is necessary to observe the wide range from several angstroms to hundreds of nanometers to analyze the structures of these materials. Moreover, the change in the sample cell, detector, and camera length are required for many experiments. We report the introduction of the new equipment for securing user experiment time by performing the measurement smoothly.

Figure 1 shows the layout of the pedestal with the automatic vacuum path rise-and-fall equipment introduced in 2007B. The pedestal has two parallel rails of 5 m, and a vacuum path with a beam stop in which a two-dimensional drive is possible to be fixed downstream of a pedestal. A beam stop can be easily replaced from the side of a vacuum path. The vacuum paths are divided into six pieces and respectively fixed on electric stages. The connection of vacuum paths is attained by uniting a flange face with an O-ring and by using a vacuum pump. Moreover, a guide is prepared on both sides of a surface plate. The slide of the plate that carries the stage on which a flange, a nose, and a sample stage are arranged according to camera length. By changing the vacuum path to make it go up and down, it is possible to perform measurement using seven camera distances of 0.25, 0.5, 1.0, 1.5, 2.0, 3.0, and 4.0 m. The photographs settings of camera lengths at 0.25 and 4 m are shown in Fig. 2. The

replacement of such a camera distance is completed in about 5 minutes. Even if all optical alignment and change in wavelength are operated, an experiment using a different camera distance is possible in about 1 hour. The speeding up of setup can be attained with an aid, which carries out the user experiment within a limited time.

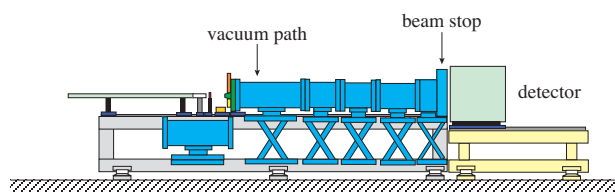


Fig. 1. Layout of apparatus with automatic vacuum path rise-and-fall equipment.



Fig. 2. Photographs settings at BL40B2 of camera lengths of (a) 0.25 m and (b) 4 m.

Hiroyasu Masunaga

SPring-8/JASRI

E-mail: masunaga@spring8.or.jp